An Address
ON
THE TREATMENT OF TYPHOID FEVER.

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GENTLEMEN,—I feel honoured by your special request that I should deliver an address on the treatment of typhoid fever, and I shall as far as possible comply with your instructions that I should describe a method of treatment which can be readily carried out in private practice—perhaps shorn of the elaborate details which I have elsewhere advocated.[1] This will not very much curtail the scope of the address, as, in my opinion, every system of treatment can be carried out in private if you have got efficient nurses, but where you cannot rely on your nursing arrangements I should strongly recommend you to send such patients to a hospital. There is nothing more annoying to a medical attendant than to find his patient imperfectly nursed at a late stage of the disease, when perhaps it is im ossible to remove him.

I am sure you do not wish me to attempt to describe any system of treatment "made easy" which is so dear to the practical English mind. There is no straight path in the treatment of typhoid fever, so you will excuse me for not attempting to describe one. There are hundreds of men who would prescribe the latest synthetical product from Germany, of which they know nothing, on the authority of a chemist's testimonial—which, perhaps, was well paid for—who would not undertake the labour attending the use of cold baths which have undoubtedly diminished the o rtality in this disease. Now I do not approve of Brand's system as a routine treatment, not because it is troublesome but because it is, as Sir William Gairdner says, too much of a battledore-and-shuttlecock treatment—on the one hand cold baths, and on the other alcohol—and because the same end can be better attained by less heroic measures.

The treatment of disease is an applied art. Scientific methods may be laid down, but the application is an art and there is no disease where there is greater scope for the display of our skill than in the treatment of typhoid fever; the ever-varying picture and the danger signals ahead afford an interesting study which should well repay the diligent inquiry of every practitioner. In the treatment of typhoid fever death seems to dog some men's footsteps. This is not because they do not know the disease as well as others do, but because they are not artists. They do not clearly see the picture which nature has unfolded; their perspective is too limited and they have no eye for detail.

As a correct diagnosis is the first part of treatment I should like thus to have commenced my address, but in the time at my disposal this would carry me too far afield. I must therefore content myself by pointing out the necessity for an early recognition of the disease, and this note of warning is especially necessary in the present day as there is now a great tendency to leave the diagnosis to the bacteriologist. In my opinion in nine cases out of 10 the diagnosis should be made by the third day, whereas if you wait for Widal's reaction you will never have an opinion before the fifth day, and frequently the patient will be on the high road to recovery, or perhaps the grave, before the diagnosis has been made for you. It is an excellent confirmatory test and as such should not be neglected; moreover, as it shows a reaction on the part of the patient against the typhoid bacilli it has some prognostic value. As a very early test I prefer Ehrlich's diazo-reaction of the urine which, although present in some other febrile affections, is never so pronounced as in typhoid fever. When the patient is improving this test gradually disappears, but Widal's, or rather Grünbaum's, reaction becomes more marked.

When you are called in to see a patient with severe headache, suffused face, moderate fever, perhaps vomiting or other gastro-intestinal symptoms, chilliness, and pains in the limbs, do not jump at the conclusion that he has got influenza and commence to dose him with antipyrin, phenacetin, or acetanilid. These drugs do a great deal of mischief in this disease and are wholly unnecessary for any other. In my opinion it is a great pity that they were ever invented.

We will suppose that you have seen the patient during the first day of the fever, which only occasionally happens, but even then you will probably get a history of some prodromal symptoms during the incubation period of the previous fortnight. There have been general malaise, lassitude, inaptitude for business, and perhaps one or two slight attacks of diarrhœa which may have been injudiciously checked. During the first day or two you may call the disease influenza, or a cold, or a chill, or whatever else you like, but, in my opinion, it is much better not to give it a name unless you feel confident as to the nature of the affection with which you have got to deal. Your thermometer will show you that the patient is feverish and so you should send him to bed after a warm bath. For any febrile process it is not necessary that he should be overclothed—nay, it is better that no method should be adopted further to elevate the temperature. Whether there be diarrhœa or constipation he should get a good dose of calomel to be followed by a saline draught on the following morning. If there be vomiting he should have three or four tumblerfuls of hot water to wash out the stomach. If there be much headache, restlessness, or sleeplessness he should get 10 grains of Dover's powder which may be combined with 10 grains of salicylic acid or salol and repeated as often as may be necessary. This should carry you on to the third day, by which time, I presume, the diagnosis will have been made, though in some cases it may require further confirmation.

PROPHYLAXIS.

Prevention is better than cure and typhoid fever is a preventable disease, but unfortunately it is one which is not prevented. By giving us a fresh water-supply sanitary authorities have lessened or almost abolished widely spread epidemics, but as an endemic in many large centres of population it is as prevalent and of as severe a type as it was a quarter of a century ago. Although the type is now as severe as ever it was, the death-rate during this period has been diminished at least 50 per cent., and I think there is still room for further improvement. Until medical officers of health succeed in extinguishing that very motile organism the typhoid bacillus it is our duty as practitioners to use every possible precaution to prevent our patients from becoming either directly or indirectly a cause of disease in others. In every case we should try to find out the source of infection so that the patient may not be further subjected to any deleterious influence and that others may not be exposed to the risk which he has failed to escape. Milk is not an infrequent medium of carrying the typhoid bacilli, and some time ago 32 children in the Liverpool district contracted typhoid fever on the same day from partaking of ice-cream from an Italian vendor of that article. At that time Dr. Charles A. Hill found some samples of ice-cream to contain a greater number and variety of micro-organisms than were to be found in Liverpool sewage. The oyster scare, which was well founded, had an excellent effect in improving the conditions under which these bivalves are reared, but even now many oysters, shrimps, &c., are not above suspicion. Flies have been credited with the spread of disease, and it is easy to see how they might readily contaminate meat and other articles of diet by conveying the bacilli from fæces or other filth. The house drainage should receive immediate attention, and all suspected articles of food or drink should be well boiled.

To prevent any spread of disease from the patient all the excretions and soiled clothing should be thoroughly disinfected; the difficulty is not so much in finding a good and cheap disinfectant as in inducing nurses to use it in efficient quantities. About half a pint of the disinfectant should be placed in the bed-pan and afterwards another half-pint should be poured over the fæces, and the whole should be well mixed and allowed to stand for two hours before being poured down the closet or otherwise disposed of. The urine and sputum should also be disinfected. The soiled linen should be soaked for two days in a solution of perchloride of mercury or biniodide of mercury (1 in 1000) before being washed. After the recovery or the death of the patient all the bedding and wearing apparel should be

[1] The Treatment of Typhoid Fever, 1892.

disinfected by heat. The nurses should be instructed to keep bed-pans and other utensils scrupulously clean and to avoid all splashing when removing the dejecta. Nurses should keep their finger-nails short, and they should thoroughly wash their hands in a solution of biniodide of mercury (1 in 1000) after every time they attend upon a typhoid fever patient and more especially before they handle any article of food. A person could carry a sufficient number of bacilli under a finger-nail to infect many people. We should all remember that many micro-organisms are really very difficult to kill. I recently found in the urine of a patient suffering from cystitis a very motile bacillus which closely resembled the bacillus of typhoid fever, and it was exceedingly lively in urine containing 40 per cent. of strong hydrochloric acid. Professor Wright and Major Semple, R.A.M.C., have introduced a typhoid vaccine as a preventive against this disease, but its value is not yet clearly defined.

GENERAL MANAGEMENT.

The patient should be put to bed and kept there until convalescence is well established. He must be taught to use the bed-pan and urinal from the commencement. His posture should be occasionally changed. He should be kept quiet, fed at regular intervals, and encouraged to sleep. The nurses should be kind, bright, and cheerful; they should have a noiseless tread and be well versed in their duties; and they should keep an accurate record of all matters appertaining to the case. The room should be large, airy, well ventilated, and kept at a temperature of from 60° to 65° F., preferably by an open fire. I like to see the windows somewhat open both day and night. It is no doubt difficult in cold weather to maintain a uniform temperature with open windows, but ventilation must never be sacrificed for heat. The relatives should be taught that fever patients do not catch cold. It is often difficult to instil this doctrine even into medical men. Often when I have exposed a fever patient for examination I have seen the medical attendant almost shivering with fear lest his patient should catch a chill. The bronchitis and congestion of the lungs from which typhoid fever patients frequently suffer are due to the typho-toxin and not to any chill, but still it is not well to increase the mischief by making the patient breathe cold air. Cylinders of oxygen have not yet been introduced in the treatment of this disease, and I hope we may long escape such a delusion and snare; what the patient requires is the pure air of heaven. The late Sir B. W. Richardson showed that prebreathed or devitalised oxygen did not support life, but in the stuffy rooms in which many fever patients are treated they can get little else, and in such cases a little oxygen from a cylinder is a poor substitute for a breath of fresh air. The room should also be well lighted, and a certain amount of carpeting on the floor as a means of lessening noise is decidedly useful. The bedstead should, if possible, be narrow and be approachable from either side. It should be fitted with spring and hair mattresses, and the latter should be protected by waterproof sheeting. Flock- and feather-beds, eider-down quilts, and other non-conductors of heat should be strictly interdicted. During the continuance of the fever it is much better that the patient should have no nightshirt. He should lie between linen sheets and should only have an additional counterpane, or at most a single blanket and light quilt. As a rule, I keep the blanket and quilt over the lower extremities and only cover the body with a sheet. There are, of course, many serious cases in which with a high internal temperature the extremities are very cold, where the covering has to be considerably modified, and it may be even necessary to apply hot bottles to the limbs and wrap them in flannel. All the clothing should be kept scrupulously clean. In many thin and emaciated patients it may be advisable to use a water-bed to prevent bed-sores, but it should never be used as an antipyretic agent. It is usually, however, only requisite at a late stage of the disease when an antipyretic effect is not needed. When the patient's temperature approaches the normal the risks from chills begin, and of course the covering should then be increased.

In severe cases the patient is dull, apathetic, and stupid; his intellectual faculties are blunted; and he is, perhaps, delirious and oblivious to all external impressions, so that he makes no demand and does not care to do anything for himself. The nurse, therefore, should be well trained and on the alert. She should keep his nose scrupulously clean, as dry, offensive secretions quickly accumulate and rhinitis is readily established with consequent risk of secondary infection. These secretions do not annoy the patient and he makes no attempt to remove them. An excellent method of keeping the nose clean is by frequently spraying it with a 2 per cent. solution of menthol in paroleine, or liquid vaseline. All dried secretions can be readily removed by a little cotton-wool on a probe. The mouth, also, should be kept very clean and all sordes should be removed from the lips and teeth. An excellent cleaning agent for spraying out the mouth consists of equal parts of glycerine and peroxide of hydrogen. Equal parts of tincture of iodine and glycerine painted along the gums is a good antiseptic. Sponging the hands and face and the application of a little eau de cologne to the head are grateful to the patient.

DIET.

Milk is almost universally held to be the staple diet in typhoid fever. It is looked upon as a model food because it contains all the ingredients necessary for repairing waste and supplying heat, but it does not necessarily follow that because the constituents are in the proper proportions for a growing infant it is best suited for a fever patient where the conditions are completely reversed. In the latter the anabolic processes are in abeyance, and the katabolic processes are exceedingly active. Where milk is the only diet in fever cases the tissue waste is exceedingly great. The nitrogenous element of food may be readily supplied by milk, but the sugar and fat are not in sufficient quantity in that fluid and they require to be supplemented from other sources. Moreover, as Sir William Jenner pointed out, a pint of milk is often more difficult to digest than a mutton-chop, and whatever foods we order we should see that they are properly digested. The stools should therefore be carefully inspected, and when any curd of milk or other undigested food is present the diet should be peptonised. The milk should be invariably diluted with an equal quantity of plain water, barley-water, or whey. I also recommend the addition of sugar of milk and chloride of sodium—the latter is too frequently omitted from febrile diets. Dr. Burney Yeo recommends the addition of an alkaline tabloid composed of bicarbonate of soda, bicarbonate of potash, carbonate of magnesium, and common salt, but I have arrived at the conclusion that all alkalies are positively injurious in typhoid fever. Latterly I have been trying buttermilk, which, as you all know, contains a large quantity of lactic acid, as I found that the typhoid bacilli did not multiply so rapidly in it as in new milk. However, they do multiply and become very active in buttermilk, and I have not yet found a diet inimical to their growth. When buttermilk is used it should be well diluted, otherwise the curds will appear in the stools. A patient in a recent severe case did remarkably well on buttermilk, with cold compresses on the abdomen and three injections of anti-typhoid serum. From two to three pints of milk are sufficient in the 24 hours, though the total quantity of fluid drunk by an adult should be at least five or six pints. When there is much intestinal decomposition with flatulent distension I am very fond of ordering whey prepared by boiling equal quantities of buttermilk and new milk and straining. To each pint of whey one or two ounces of cream may be added.

The best diet to prevent the wasting in typhoid fever has not yet been determined. The loss of weight during the febrile process is to a considerable extent due to the dehydration of the tissues, but the water is afterwards quickly replaced and this to a great extent accounts for the rapid increase of weight which usually takes place when the convalescent stage is reached. During the fever there is little or no tissue upbuilding and therefore the demand for nitrogenous food cannot be great, but if the pyrexia, which is inevitable, is not to be maintained at the expense of the tissue we must supply an abundance of other fuel in the form of easily assimilable carbohydrates or hydrocarbons. The great objection to carbohydrates is their undoubted liability to undergo fermentative changes with the liberation of gas in the intestinal tract. No doubt when the salivary and pancreatic secretions are much diminished ordinary farinaceous diet should not be given until it has been subjected to the amylolytic action of some of the many ferments in the market. If you keep the patient's temperature down by hydrotherapeutic measures you will find that the whole of the digestive processes are much improved. Of this class of diet I frequently order peptonised bread and milk, Benger's food, Mellin's food, or Horlick's malted milk, and about two ounces of butter, or five or six ounces of cream daily. During the febrile stage the food, whatever it be, should be liquid and should be administered every two or

three hours when the patient is awake. If there be constipation or not much diarrhœa extract of malt will be found useful, and sugar or sugar of milk may usually be given, also the expressed juice of ripe grapes, but neither the skins nor seeds. If any stimulating effect is required beef-tea, mutton broth, or chicken broth, with vegetable juices but no cellulose, clear soup, beef essence, cocoa, and coffee may be given, and one or two raw eggs may be administered daily during any stage of the disease. The patient should be encouraged to drink plenty of pure cold water, toast-water, barley-water, whey, or home-made lemonade. If there be any constipation a little cream of tartar may be added to the lemonade.

During the whole course of the fever do not rest satisfied with the report that the bowels are freely opened but daily inspect the abdomen, examine the urine, and, if convenient, see one of the stools. If the bowels be at all loaded, if the abdomen be distended, and if the urine contain an appreciable amount of indican you have sufficient evidence that decomposition of the contents of the bowel is going on, consequently the bowels should be cleared out with a dose of castor-oil or other gentle laxative, and the diet should be diminished.

The liquid nourishment should be continued until the temperature has been normal for a week or ten days and then you should begin cautiously with fish, chicken, mutton, lightly-boiled eggs, sweetbreads, boiled tripe, &c. When the patient has been fairly nourished during the fever his temperature is not likely to be affected when he begins to take solid food unless there be constipation, and this should not be allowed to occur. Recrudescences and relapses are often ascribed to the use of solid food when the occurrences are merely coincidences. Constipation with retention of the typhoid and colon bacilli is a more likely source of future mischief.

ALCOHOL.

The most severe case of typhoid fever can be better treated without alcohol than with it, and the conditions demanding its use in this disease are very few and far between. Alcohol is not a food in the proper acceptation of the word: it is a sedative, or, to use a commoner though less accurate designation, a stimulant. It causes vaso-motor paresis which is usually sufficiently accomplished by the fever poison without any assistance. This effect may be necessary during the chilly stage, during collapse, or to counteract the effect of a cold bath, but in a well-managed case, without any heroic treatment, such influence should not often be necessary. In cases where there is high body temperature with cold extremities I occasionally allow a pint of good bitter beer in the 24 hours as a diffusible stimulant to lessen peripheral resistance to the circulation. When there is obstinate vomiting a little champagne occasionally does good and in cases of sudden collapse a few teaspoonfuls of brandy may be given. By writers on this subject most elaborate rules have been laid down to guide the administration of alcohol according to the state of the heart, the pulse, the tongue, and the nervous system, but these rules are usually utterly devoid of any physiological basis, and even their authors would have great difficulty in determining beforehand their proper application in practice. Alcohol is not a cardiac tonic, but it is usually prescribed in typhoid fever with that object in view, and we frequently see drugs having a diametrically opposite action—such as alcohol on the one hand and strychnine or digitalis on the other—given with the view of strengthening the heart's action and tiding the patient over a difficulty. I have seen the limbs jumping about under the influence of alcohol and strychnine given with the view of supporting that common bugbear, a weak heart, when there was not the slightest probability of any cardiac failure. We frequently hear of patients being "kept alive" for a certain number of days on brandy; but as these cases generally end in death it would perhaps be more accurate to say that the only nutriment they had during the last few days of life was diluted brandy. The tenure of life held under such conditions is usually dearly bought. I have never been able to see why dying patients should have their mouths parched with brandy, often of an abominable quality, which would early make them cry out, if they were only able, for a drop of cold water to moisten the tongue. Some men prescribe alcohol freely in typhoid fever and pneumonia because they believe in its efficacy; others because they are too weak to run counter to the views of the patient's relatives; and teetotalers, who have no personal knowledge of alcohol, because it is the popular thing to do and they do not like to be considered prejudiced. They have a vague idea that what they consider a potent poison in health must be a powerful remedy in disease. Many of those who prescribe it very sparingly think that it should be specially given to patients accustomed to it in health so as not to disturb any long-acquired habit, but in my experience—and I am supported by the experience of Sir William Broadbent—these are just the cases which do better with other medicaments. Frequently I prescribe some alcohol for myself and my healthy friends, but when any of them are diseased I am not likely to poison them with this drug. If I were convalescing from typhoid fever I would enjoy some good port, and I do not care to prohibit others from what I would probably take myself. As a food or antipyretic agent it is of very little value and should be avoided during the febrile stage unless there be some special reasons for its use. The large quantities of alcohol which are frequently prescribed must inevitably lead to cardiac asthenia and so protract convalescence. It is not a cardiac tonic and should be reserved for a time when its potency in lessening peripheral resistance and so relieving the heart will be of service.

ANTIPYRETIC TREATMENT.

The fever induced by the typho-toxin is a natural part of the disease and so long as it remains moderate in degree it does not demand much interference. There are some severe cases where the intensity of the poison stupefies the nervous system and subdues the temperature, so that the case only assumes a normal course when the bowels have been well cleared out and we get febrile reaction. We know that high temperature can work mischief irrespectively of the agent which induced it, though it is a mistake to suppose that all the evils of fevers are due to the high temperature, because apyrexia might be maintained throughout the whole course of the illness by the use of powerful antipyretic drugs without modifying the course of the disease or improving the patient's chance of recovery. The albuminous degeneration which occurs in the striped muscular fibre of the heart and voluntary muscles, in the cells of all the glandular organs, and even in the nerve cells, is no doubt largely due to the high temperature, though I think the fever poison must also be partly credited with this degradation, because evidence of its existence can be found in all severe cases no matter how well the temperature has been subdued. The temperature, however, is the one factor in fever which can be most readily combated, and when this has been efficiently carried out by the antipyretic action of water the signs of degeneration are correspondingly lessened. For example, in my tank cases[2] the heart's action improved and there was no anxiety as to cardiac paralysis. The functions of the glandular organs were restored, and although the nervous irritability was heightened there were no signs of nervous exhaustion and consequently convalescence progressed rapidly. I have discarded the use of drugs as antipyretic agents, and I shall now consider some of the methods of applying water for the reduction of the temperature.

Warm or tepid bath.—At the very commencement of an attack of fever, before we know the exact nature of the illness with which we have got to deal, when the patient is chilly and restless, I think the cleansing and soothing effects of a warm or tepid bath will be decidedly beneficial. Cold sponging is very grateful to the patient, but it has no lasting effect on the temperature and is only suitable for mild cases.

Cold compresses.—Cold compresses kept constantly applied over the whole abdomen form the antipyretic agent which I most frequently employ, the patient having no nightdress or other body-covering except a large compress sufficient to cover the abdomen and lower ribs. This is wrung out of cold or iced water and frequently changed, except when the patient is asleep; even then it can be changed without much disturbance, but so long as it is moist it acts as a cooling agent and frequent renewal is not necessary. A large cradle is placed over the patient and this is covered with a single sheet, so that evaporation is allowed to take place freely. In order to keep the four extremities comfortable I direct a large stocking to be kept on each, or they may be wrapped in flannel. In the case of the lower extremities it is often advisable to keep a warm bottle in the bed.

The hammock.—In very severe cases I have used the continuous bath, and latterly I have been adopting a somewhat more convenient method of having the patient swung in a hammock and a small constant stream of tepid water kept

[2] The Treatment of Typhoid Fever, 1882.

playing over the abdomen. This is best carried out by taking the framework of an Ilkley couch and stretching over it loose canvas cloth such as is used for sunblinds in greenhouses; this hammock can be set on any ordinary bedstead. A water-pillow is placed to receive the patient's buttocks, but otherwise he can be placed naked on the canvas. A large piece of flannel is now used as a wet compress to cover the abdomen and lower part of the chest. A small, constant stream of water at 80° F. diffuses over this flannel, passes on to the hammock, and gravitates to the most dependent part near the buttocks, where it is easily collected in a large bucket or other receptacle. If it be thought necessary to increase the comfort of the patient a large spirit lamp can be kept constantly burning under the bed; this increases the evaporation and so carries away a great amount of latent heat. The patient's thighs and legs should be kept wrapped up in a dry blanket. This method so far has been successful in each case in which I have tried it. One of my best cases was a severe attack of typhoid fever in a delicate woman who was in the sixth month of pregnancy; she was also suffering from advanced mitral stenosis and congestion of the lungs, and towards the end of the third week she had a severe attack of intestinal hæmorrhage. She made a good recovery, carried the child to the full time and on many occasions since has shown herself and child at the Liverpool Royal Infirmary. Any man with a little ingenuity can easily devise a method to suit the circumstances of any individual case. An ice-bag to the right iliac fossa in cases of intestinal hæmorrhage is very useful, but even in these cases I prefer its use to be intermittent as the constant application is apt to lower the vitality of the parts. Where there is a tendency to pulmonary œdema, one of the most fatal complications of this or any other disease, it indicates failure of the right side of the heart, and in such cases I like cold compresses to the abdomen to lower the temperature, rouse up the nervous energy, and increase the depth of the respirations.

Cold-water enemata.—It is an excellent plan to allow a pint and a half of cold water containing some antiseptic, such as permanganate of potassium or peroxide of hydrogen, to gravitate up the large bowel once or twice daily. This helps to cool the body, but, what is of much more importance, it washes away all decomposing matter which has accumulated in the large bowel; this should be adopted in every case where there is an excess of indican in the urine. These methods of treatment keep the temperature within bounds, improve the vaso-motor tone, and raise the systemic blood-pressure and increase the depth of the respirations. There is marked improvement in the digestive tract; the tongue becomes moist and clean, the salivary secretion increases, the appetite and digestion improve, the diarrhœa disappears, and the character of the motions changes for the better. There is, as a rule, no delirium and the general well-being of the patient greatly improves. Although the diet is, in my opinion, always liberal, there is usually a craving for more to eat long before it is deemed advisable to give solid food.

MEDICINE.

I have not much faith in trusting too much to physic in typhoid fever, though I usually adopt a routine plan of giving some intestinal antiseptic, not with the view of killing the bacilli, but to prevent intestinal decomposition. If the patient comes early under observation and there is much retching or vomiting I am sufficiently old-fashioned to order an emetic, and of all emetics the simplest is the best. I prefer two or three tumblerfuls of hot water to anything else. If these symptoms occur at a later stage of the disease they are indicative of prostration with congestion of the stomach or perhaps some cerebral affection and should be treated accordingly, but no emetics should be administered. If the cause be referable to the stomach a sinapism should be applied to the epigastrium, and a few small doses of calomel, and perhaps a little champagne, be given. When the vomiting is due to typhoid ulcers in the stomach, which I have seen in two cases, it is a most difficult matter to control. I always begin treatment with a good calomel purge and afterwards keep the bowels well opened during the whole illness.

Constipation in this disease is frequently due to an inactive and distended condition of the large bowel, of which the natural secretion is defective and consequently the liquid portion of the fæces is absorbed. The hard scybala may cause irritation and set up a catarrhal flux which, however, is usually insufficient to effect their removal; the frequent small liquid motions may give rise to the impression that the trouble is diarrhœa rather than constipation. To empty the large bowel and lessen its torpidity enemata given daily or every other day will prove highly efficacious. I saw a patient recently who had been dosed with lead and opium pills until the abdomen was as tense as a drum. The tympanitic distension was relieved and real constipation established by repeated cold-water enemata containing permanganate of potassium.

The more or less routine administration of intestinal antiseptics has a good effect in preventing decomposition and lessening distension, but you must not suppose that you are thus going to kill the typhoid bacilli. I generally use benzo-naphthol or salol, but no doubt many other antiseptics are equally useful. The chlorine mixture of Dr. Burney Yeo has, perhaps, the advantage of neutralising his alkaline tablets. You can more effectually disinfect the fæces outside than inside the intestinal tract. Frontal headache and sleeplessness in the early stage are best relieved by Dover's powder and salicylic acid; these remedies are also useful in tympanitis. For bronchial catarrh and hypostatic congestion of the lungs use ammonium carbonate and caffeine. Pulmonary œdema, indicative of right cardiac failure, is best relieved by cardiac tonics and agents to increase the action of the respiratory pump, such as caffeine, strychnine, digitalis, cold applications to the abdomen, &c. Pneumonia and pleurisy are usually supposed to demand stimulants, but the stimulant should be more especially ammonia, or ammonia, caffeine, and quinine, but not alcohol. In pneumonia and hypostatic congestion of the lungs there is vaso-motor paresis which requires to be counteracted by a vaso-motor tonic and not intensified by alcohol.

HÆMORRHAGE.

A sudden fall of temperature, a blanched anxious face, and a small weak pulse should direct our attention to the occurrence of hæmorrhage, even before the blood has appeared in the stools. No doubt epistaxis, and even hæmorrhage from the bowels, at an early stage of the fever from congestion of the mucous membranes, is not a matter of much importance, but profuse hæmorrhage about the end of the third week is a fact of the gravest significance. The patient is not then in a position to bear the loss of blood, and the sudden fall of blood-pressure places his life in imminent danger. The horizontal position should be strictly maintained, and if the loss of blood has been great the foot of the bed should be raised so as to depress the patient's head below the rest of his body. All unnecessary disturbance of the body should be avoided, and the urine should be drawn off with a catheter. The first internal remedy should be a dose of opium. A teaspoonful of laudanum is a fair dose for an adult, and it is much better to give one large dose than several small ones. The best hæmostatic is perhaps turpentine in 10-minim doses every hour or two. In these cases there is generally defective arterial tone, to counteract which ergotin may be injected hypodermically, or chloride of calcium may be added to the turpentine mixture. Suprarenal capsule is a good vaso-constrictor, but its value in intestinal hæmorrhage is somewhat problematical. If there be any vomiting the patient should have ice to suck or swallow. Until all hæmorrhage has ceased the stomach should not be troubled with much food, and this should only consist of beef essence, soup, peptonised gruel, and whey. The intermittent use of a large ice-bag, especially if there be any febrile temperature, to the right iliac region is efficacious.

PERFORATION.

Early surgical operation, though hitherto not very successful, offers perhaps the best chance of recovery. If the operation be not performed early there is apt to be general peritonitis, which further militates against the patient's recovery. Moreover, the coils of bowel get glued together, and it may be difficult to find the perforation. Some time ago I saw a case with Mr. W. R. Judd in which we diagnosed perforation on account of the collapse, abdominal distension, and complete absence of hepatic and splenic dulness. From the history we concluded that the perforation occurred soon after Mr. Judd's visit on the previous day, and at least 24 hours before the night on which I saw the patient. We thought him too ill for operation, but agreed that Mr. F. T. Paul should see him with us early on the following morning. We put him on a starvation diet, and ordered

10 grains of Dover's powder and 10 grains of salicylic acid every four hours. In the morning when we three met he seemed better; his pulse was fuller and less frequent, and the tympanites was less. The question of operation was postponed for 24 hours, and we directed that the starvation and powders should be continued. On the following morning he was much better; the tympanites was less, and the hepatic and splenic dulness could be made out. The question of operation was dismissed and he eventually made a good recovery. In this case, I presume, the perforation was soon sealed up by glueing to a neighbouring coil of bowel, but such a happy result is of rare occurrence.

PERITONITIS.

When this follows on perforation the treatment will be similar to that of the condition which induced it. When it occurs as a rare complication of typhoid fever without any antecedent perforation, it should be treated on general principles. In these cases it is usually due to indiscreet attempts to check the diarrhœa, and is perhaps not so frequently caused even in these typhoid cases by the bacillus typhosus as by the bacillus coli communis and other micro-organisms. The intestinal congestion should be diminished by small and repeated doses of calomel and opium, and if there be constipation or only slight diarrhœa small doses of some saline, such as sulphate of soda, should be given as frequently as is requisite. The pain should be completely subdued by opium. The circulation in the abdomen and the distension of the bowel should be lessened by an ice-bag or cold compresses applied to the abdomen.

CYSTITIS.

Cystitis is not of infrequent occurrence and may be due to either the typhoid or colon bacillus. The best remedies are urotropine and salol.

TYMPANITES.

There is always, or nearly always, a certain amount of flatulent distension of the abdomen in typhoid fever, but excessive tympanites usually occurs when there is great nervous prostration and should be treated accordingly. It is not infrequently due to over-feeding and consequent intestinal decomposition. When, therefore, you find much abdominal distension and excessive indican in the urine the diet should be materially diminished. Cold compresses to the abdomen do good; intestinal antisepsis should be carried out to lessen fœtor and prevent decomposition of the contents of the bowel. For this purpose such remedies as salicylic acid, salol, benzo-naphthol, turpentine, menthol, cajuput, ammonia, quinine and caffeine, &c., will be found useful. The food should be peptonised.

CONSTIPATION.

Sir William Jenner pointed out that this condition when persistent is frequently associated with deep ulceration and a greater liability to hæmorrhage. It should be counteracted by mild laxatives, such as calomel, salines, or castor-oil, and any over-loading of the large bowel should be removed by enemata. I never see a case where the diarrhœa is such as to require astringents. The possibility of retention of urine, too, should always be kept in mind.

ALBUMINURIA.

This is a valuable indication as showing the state of the circulation. It indicates renal congestion and is associated with defective cardiac energy, diminished vis viva in the circulation, and vaso-motor paresis. Such conditions are improved by hydro-therapy, and vaso-motor tonics such as caffeine, digitalis, ammonia, and quinine.

PROTRACTED INTERMITTENT PYREXIA.

Typhoid fever is often protracted by recrudescences and relapses, but occasionally we get evening rises of temperature lasting for one or more weeks due to secondary infections. I have seen the pyrexia in some such cases cut short by a few injections of antistreptococcic serum.

THROMBOSIS AND EMBOLISM.

In both these conditions the part affected should be kept warm and at perfect rest. Ammonia should be freely administered, and frequently opium is of good service. I shall not weary you further with the treatment of rare complications nor with that of convalescence. If you follow the lines which I have laid down you will have a low mortality, and that is a point of primary importance to your patients.

EXPERIMENTAL PROOF OF THE MOSQUITO-MALARIA THEORY.

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ALTHOUGH the theory that the malaria parasite is transmitted from man to man by particular species of mosquito is now accepted by all biologists and medical men who have given adequate attention to the subject it cannot be said that the general public (including those Europeans who in malarious countries might benefit by the practical application of the theory) unreservedly believe in it, much less practically apply it. Endless objections the outcome of an imperfect acquaintance with the subject—and perhaps of a disinclination to admit that a pathological puzzle of so many centuries' standing could receive so simple an explanation—have been raised by the amateur biologist and sanitarian; so much so that it seemed not improbable that a great principle, pregnant with important issues, might remain barren and unutilised.

Impressed with this fear and being anxious to see some fruit from a theory which I knew to be true and for which I was in a measure responsible, I cast about for means by which the conversion and coöperation of the public might be secured. I felt that unless the public believed in the efficiency of the sanitary measures so definitely indicated by the mosquito-malaria theory and to some extent understood the principles on which these measures should be founded they would not adopt them or, what is so necessary to the success of all such measures, coöperate heartily in carrying them out. As the histological, biological, and experimental evidence which had satisfied men of science was not understood by the public it seemed to me that some simple demonstration was required such as would be unanswerable and at the same time readily comprehended by laymen.

Grassi, in conjunction with Bignami, had succeeded in conveying malaria by mosquito bite. Although these experimenters took every care to exclude fallacy the fact that the experiments were made in Rome—itself of fever repute and in the middle of a highly malarial district—had an undoubted influence in preventing due appreciation by the public of the conclusive nature of their work. Furthermore, things occurring at a distance and in a strange land do not appeal so strongly as do things happening in our midst. It occurred to me, therefore, that if I repeated Grassi and Bignami's experiments in a more dramatic and crucial manner—that if I fed laboratory-reared mosquitoes on a malarial patient in a distant country and subsequently carried the mosquitoes to the centre of London, and there set them to bite some healthy individual, free from any suspicion of being malarial, and if this individual within a short period of being bitten developed malarial fever and showed in his blood the characteristic parasite—the conclusion that malaria is conveyed by the mosquito would be evident to every understanding and could not possibly be evaded. It also occurred to me that if a certain number of Europeans who had never suffered from malaria kept in good health and free from malaria during an entire malarial season in an intensely malarial locality where all inhabitants and visitors suffered from malaria, and if they kept well without the use of quinine or other medicinal prophylactic, simply by avoiding mosquito-bite, that the above conclusion would be accentuated; and, also, that if this immunity were attained by inexpensive means, means which did not interfere seriously with comfort, pleasure, or business, the mosquito-malaria theory would not only be proved to the satisfaction of the public but the public would be willing to accept the sanitary measures which the theory and experiments indicated. After having obtained promise of support from the Colonial Office and from the London School of Tropical Medicine and securing volunteers for the experiments, still further to accentuate my object and to arrest the attention of those principally interested I publicly announced in a popular lecture at the Colonial Institute that the above experiments were about to be undertaken and with the same object in view I ventured to forecast their issue.

EXPERIMENT I.

Dr. Bignami and Dr. Bastianelli very kindly undertook to send me relays of infected mosquitoes from Rome. I have to thank these gentlemen for the great care exercised in this somewhat responsible matter. Every case of malaria coming to a general hospital is not suitable for experiment. To have sent mosquitoes infected with malignant tertian parasites might have endangered the life of the subject of the experiment; and quartan-infected insects might have conferred a type of disease which, though not endangering life, is extremely difficult to eradicate. The cases, therefore, on which the experimental insects were fed had to be examples of pure benign tertian—a type of case not readily met with in Rome during the height of the malarial season—and the absolute purity of the infection could be ascertained only by repeated and careful microscopic examination of the blood of the patients.

When the insects had fed, Dr. L. Sambon, who had gone to Rome in connexion with Experiment No. II., placed them in small cylindrical cages made of mosquito netting stretched on a wire frame. Four such cylinders were packed in a well-ventilated box and forwarded to the London School of Tropical Medicine through the British Embassy in Rome. By the courtesy of the Postmaster-General they came forward by the Indian mail so that they arrived in London some 48 hours after leaving Rome. A good many of the mosquitoes died on the journey or soon after arrival; but a fair proportion survived and appeared to be healthy and vigorous. We are indebted to Dr. Sambon for the method employed of caging mosquitoes. Future experimenters will find it very useful. To infect the insect, or to become infected by them, the experimenter has merely to place his hand in the cage after carefully untying the netting at one end or, better, by laying the closed cage on his damped hand.

The following notes regarding this experiment are by Mr. P. Thurburn Manson, Guy's Hospital:—

"I am 23 years of age. I was born in China, but have lived in this country since I was three years old, and have never been abroad since, nor in any district in this country reputed to be malarial. I am healthy.

"The first consignment of mosquitoes arrived at the London School of Tropical Medicine on July 5th. Only some half-dozen had survived the journey. They were in a languid condition and would not feed satisfactorily. One may have bitten me. By July 7th they were all dead. The second consignment arrived on August 29th. They had been infected in Rome on August 17th, 20th, and 23rd by being fed upon a patient with a double benign tertian infection. The patient was reported to have had numerous parasites, including many gametes, in his blood. On arrival 12 insects were lively and healthy-looking. I fed five of them on August 29th, three on August 31st, one on Sept. 2nd, and one on Sept. 4th. They bit my fingers and hands readily. The bites were followed by a considerable amount of irritation which persisted for two days. The third consignment arrived on Sept. 10th. They had been fed in Rome on Sept. 6th and 7th on a patient suffering from a simple tertian infection but with very few parasites in his blood. There were some 50 to 60 mosquitoes in good condition. 25 bit me on Sept. 10th and 10 on the 12th.

"Up till *Sept. 13th* I had been perfectly well. On the morning of the 13th I rose feeling languid and out of sorts with a temperature of 99° F. By midday I was feeling chilly and inclined to yawn. At 4.30 P.M. I went to bed with severe headache, a sensation of chilliness, lassitude, pains in the back and bones, and a temperature of 101·4°. Repeated examinations failed to discover any malarial parasites in my blood.

"*September 14th.*—I slept fairly well but woke at 3 A.M. with slight sweating and a temperature of 101°. During the day my temperature ranged between 101° and 102°. The symptoms of the 13th were exaggerated and anorexia was complete. Several examinations of the blood were made again with negative result. To relieve headache 10 grains of phenacetin were given at 6 P.M.; I perspired profusely but slept indifferently.

"*September 15th.*—I woke at 7 A.M., feeling distinctly better, with a temperature of 100·4°. No malaria parasites were discovered on repeated examinations of my blood by my father. About 2 P.M. I commenced to feel slightly chilly; this soon wore off and I became hot and restless. By 4.30 P.M. my temperature was 103·6°. It remained about 103° till 9 P.M., when profuse sweating set in. I am told there was some delirium.

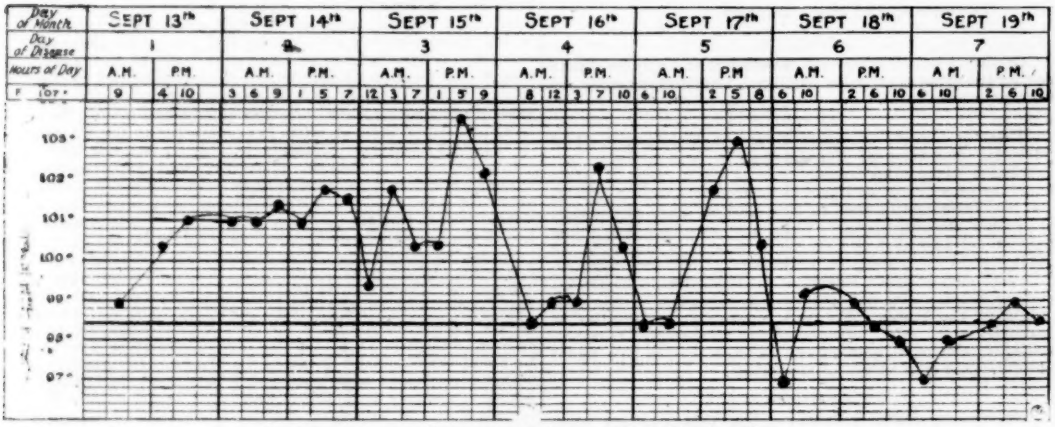

Chart showing course of temperature in the case of Mr. P. Thurburn Manson.

"*September 16th.*—I woke at 8 A.M. feeling quite well; my temperature was 98·4°. I made several blood examinations and found one doubtful half-grown tertian parasite. In the afternoon and evening there was a recurrence of fever (temperature 102·8°) relieved by sweating.

"*September 17th.*—I again felt quite well on waking after a good night's sleep; my temperature was 99°. At 10 A.M. several half-grown parasites, a gamete, and two pigmented leucocytes were discovered in the first blood film examined. During the day many tertian parasites were found. Their presence was verified by my father and by Dr. Frederick Taylor, Lieutenant-Colonel Oswald Baker, I.M.S., Dr. Galloway, Mr. Watson Cheyne, F.R.S., and Mr. James Cantlie, some of whom saw the films prepared. About 2 P.M. the sensation of chilliness returned (temperature 101·8°). By 5 P.M. the temperature had reached 103°. There was then copious sweating. The edge of the spleen could be felt on deep inspiration and there was a slight feeling of discomfort in the region of that organ. Dr. Frederick Taylor and Mr. Watson Cheyne confirmed the presence of splenic enlargement. By 9 P.M. the temperature had fallen to 99·2° and I was feeling better. Quinine (10 grains) was taken.

"*September 18th.*—I woke after a good night feeling perfectly well (temperature 97°). 10 grains of quinine were taken and subsequently five grains every eight hours. I continued perfectly well all day. A few three-quarter-grown tertian parasites and some gametes were found during the forenoon and afternoon; they were seen by Dr. Oswald

Browne, by my father, and by myself. At 10 P.M. the parasites had disappeared, the last being found at 5 P.M.

"*September 19th.*—No parasites were discovered. The temperature is normal. I am feeling quite well. There is no splenic enlargement and no tenderness. Appetite has returned.

"*September 25th.*—In good health. No recurrence of malarial symptoms."

EXPERIMENT II.

A wooden hut, constructed in England, was shipped to Italy and erected in the Roman Campagna at a spot ascertained by Dr. L. Sambon, after careful inquiry, to be intensely malarial, where the permanent inhabitants all suffer from malarial cachexia, and where the field labourers who come from healthy parts of Italy to reap the harvest after a short time all contract fever. This fever-haunted spot is in the King of Italy's hunting ground near Ostia, at the mouth of the Tiber. It is water-logged and jungly and teems with insect life.

The only protection against mosquito bite and fever employed by the experimenters was mosquito netting-wire screens in doors and windows and, by way of extra precaution, mosquito nets around their beds. Not a grain of quinine was taken. Dr. Sambon and Dr. G. C. Low, Signor Terzi, and their two Italian servants entered on residence in their hut early in July. They go about the country quite freely—always, of course, with an eye on anopheles—during the day, but are careful to be indoors from sunset to sunrise. Up to Sept. 21st, the date of Dr. Sambon's last letter to me, the experimenters and their servants had enjoyed perfect health, in marked contrast to their neighbours who were, all of them, either ill with fever or had suffered malarial attacks.

For the present I content myself with announcing this result. Complete details of their experiences will doubtless be made public by Dr. Sambon and Dr. Low at the termination of the malarial season and of their experiment at the end of October. Suffice it to say that these gentlemen express themselves as satisfied that protection from mosquito bite protects from malaria and that protection from mosquito bite is perfectly compatible with active outdoor occupation during the day.

It remains for the public to apply the lesson taught by these experiments. Will this be done? Already I have heard objections and difficulties mooted. I saw it advanced recently that it is impossible to avoid mosquito-bite in the tropics and that it was useless to try to do so. One has sometimes to go out in the evening; a medical man, for example, must visit his patient at any hour. This is quite true; but, surely, because we cannot escape a risk altogether this is no reason why we should not try to minimise it. Dr. C. W. Daniels, who has recently returned from British Central Africa, tells me that not one mosquito in a thousand in that country carries malarial zygotes—that is to say, is infective. If a man exposes himself, therefore, in British Central Africa to mosquito-bite habitually, so that he gets bitten, say, ten times every night, the chances are that he is effectually inoculated with malaria some four times a year; but if the same man systematically protected himself from mosquito-bite and, in consequence of his care, reduced the chances of being bitten to once a month he may be 100 years in British Central Africa before he gets infected. This minimising of risk is certainly worth striving for.

The question of expense cannot for a moment be entertained in discussing the means for protection. One life saved, one invaliding obviated, would, even in a pecuniary sense, pay for all the wire gauze and mosquito-netting requisite to protect every European house in West Africa.

These experiments, together with the work of Ross, Grassi, Celli, Bignami, Bastianelli, and other Italians, and the recent observations on native malaria by Koch and the representatives of the Malaria Commission of the Royal Society and Colonial Office, plainly indicate that the practical solution of the malaria problem lies (1) in avoiding the neighbourhood of native houses, the perennial source of malaria parasites; (2) in the destruction, so far as practicable, of the breeding pools of anopheles; and principally (3) in protection from mosquito-bite.

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PUERPERAL SEPSIS[1]

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PUERPERAL sepsis is nothing more or less than a surgical fever arising from the infection of a wound, the only differences being—(1) the large extent of surface liable to infection; (2) the structures involved; (3) the presence of a quantity of dead material which easily lends itself to infection; and (4) the fact that the patient is undergoing certain physiological changes, this, perhaps, making her more liable to infection. The different varieties of puerperal sepsis are as follows: (1) sapræmia, or septic intoxication due to a local cause; (2) septicæmia, or acute septic infection or acute sepsis; and (3) pyæmia. We shall consider these three conditions separately.

I.—SAPRÆMIA.

Sapræmia is a fever due to the absorption of the products of decomposition from the parturient canal or due to the absorption of toxins produced by micro-organisms in the structures surrounding the parturient canal. It may be divided into different varieties according to the cause: (1) fœtid sapræmia; (2) suppurative sapræmia; and (3) inflammatory sapræmia.

1. *Fœtid sapræmia.*—This is due to the absorption of the products of decomposition in the parturient canal, and the materials which may decompose are the lochia, blood-clot, retained pieces of membrane, or portions of placenta. The symptoms of this variety are: first, a headache which often precedes the initial rise of temperature and pulse, which, as a rule, occurs on the third or fourth day succeeding the confinement but may occur later, and which is usually proportional to the quantity of decomposing material. The lochia of course are abundant and fœtid; the pulse, which is full and bounding, varies from 110 to 120, and the temperature varies from 101° to 103° F. The tongue at first is clean, but in a day or so it becomes heavily coated. The patient sleeps very well and has no pain, and on the second day of the fever the headache usually disappears. In severe cases the symptoms may be ushered in with a rigor, and if the case be allowed to continue without treatment the symptoms become aggravated and the patient's complexion becomes sallow. The milk function is not interfered with and perspiration is usually excessive. The treatment of this condition consists in efficient douching with creolin solution (half an ounce to one gallon of warm water) until the temperature falls to normal. If a vaginal douche be not sufficient to reduce the temperature and the rate of the pulse it should be followed the day after by a uterine douche, and in severe cases this should be administered twice daily. The diet should be generous and easily digestible. In cases, however, where in spite of douching the symptoms do not abate, and where there is reason to believe that some of the membranes or part of the placenta have been retained, a gentle curetting with Rheinstädter's flushing curette will be of service.

2. *Suppurative sapræmia.*—This is a sapræmia due to the absorption of toxins produced by suppuration on the surface of the parturient canal. It includes puerperal ulcer, either on the perineum, the vaginal wall, or on the cervix, suppurative colpitis, and septic endometritis. This condition is usually more sudden and severe than fœtid sapræmia, being generally ushered in with a rigor, with high temperature (from 103° to 105°) and very rapid pulse (from 120 to 150). There is no pain and the lochia are septic but not so abundant or foul-smelling as in cases of fœtid sapræmia. This condition may commence any day during the puerperium after the second, either independently of, or as a consequence of, fœtid sapræmia. The pulse and temperature continue high, and in cases where a small extent of surface is involved and is properly treated the temperature quickly falls to normal, usually by crisis; in other cases—especially in those of considerable septic ulceration of the vagina—the temperature may remain high for some days in spite of treatment, and then suddenly falls to normal by crisis. The tongue is heavily coated. The patient sleeps fairly well, takes her

[1] An introductory communication to the Northumberland and Durham Medical Society on March 8th, 1900.

food well, but generally feels ill. A puerperal ulcer may appear on the perineum, on the vaginal wall, or on the cervix, and always in the situation of a laceration. This ulcer is irregular in outline and its surface is of a dirty greyish appearance and secretes a small amount of highly septic pus. It can be easily seen by separating the vulva and looking at the perineum or examining the cervix by means of a speculum. The treatment consists in washing it three times daily with creolin or corrosive sublimate solution, dusting it with iodoform, and keeping a piece of iodoform gauze applied to it. The ulceration may, however, extend to the whole vaginal wall, causing the pulse and temperature to rise very high—the temperature from 104° to 106° and the pulse from 140 to 160. The treatment which answers best in this condition is similar to the last-mentioned—viz., douching twice daily with creolin solution and packing the vagina loosely with iodoform gauze. Stimulants are usually indicated (small doses at frequent intervals) and concentrated and liberal diet. Septic endometritis is the most fatal form of sapræmia. Its symptoms are much the same as those of a severe case of fœtid sapræmia and its treatment is somewhat similar. The question of curetting in this condition is still subject to discussion. Some authorities maintain that it is best to curette in order to remove the diseased endometrium, while others consider that, no matter how carefully it is performed, curetting will only remove part of the diseased endometrium, leaving a large raw surface for further infection, and the protective layer which is formed under the diseased endometrium is also removed,[2] predisposing to the spread of the septic processes into the connective tissue of the uterus itself and thereby causing a septic metritis or perhaps even acute sepsis. The method, however, recommended by Dührssen of douching and plugging the uterine cavity with iodoform gauze has met with the greatest success. Extirpation of the uterus has also been advocated by some authorities, but in the performance of this operation we are confronted with three grave dangers. The first is the condition of the patient herself prior to the operation, the second is the danger of infecting the patient during the operation, and the third is the impossibility of ascertaining whether the septic condition is limited to the endometrium or has extended into the surrounding structures. The results attained will perhaps teach us not to advise this operation. As a consequence of septic endometritis, salpingitis or puerperal pyosalpinx may supervene. This comes under the head of gynæcology.

3. *Inflammatory sapræmia.*—This is due to an acute inflammation of the vagina, uterus, or parametrium. This condition is invariably associated with considerable pain. In simple colpitis the vagina is red, hot, and tender, with pain on micturition and defecation, but the lochia need not necessarily be fœtid. Douching with weak creolin solution will give considerable relief. The bowels should be kept freely open. In cases of metritis there is considerable pain on palpating the uterus which is enlarged and the lochia are red and abundant. The treatment, besides occasional douching of the uterus, is chiefly symptomatic. Parametritis is an inflammation of the cellular tissue surrounding the uterus and of that between the layers of the broad ligaments. It is usually a consequence of metritis or of sepsis extending through a cervical laceration. The pain is referred to either iliac fossa, and a tender swelling can be felt bimanually on either side of the uterus. The patient may lie with either one or both legs drawn up, indicating that the inflammation has extended to the cellular tissue of the iliac fossa. It is often associated with pelvic peritonitis. The treatment consists in perfect rest, aperients, good, concentrated, easily digestible diet, syrup of the iodide of iron, or small doses of iodide of potassium internally, and tampons of cotton wool, permeated with glycerine and ichthyol (10 per cent.), placed daily in the vaginal fornix. Parametritis usually ends in resolution, but may break down into abscess.

II.—SEPTICÆMIA.

Puerperal septicæmia, otherwise known as acute sepsis or acute septic infection, is an extremely fatal condition, but fortunately comparatively rare. It may arise independently or as a consequence of any of the preceding conditions. Its chief symptoms are an initial rigor occurring from 36 to 60 hours after the date of infection, with an extremely rapid pulse (from 140 to 160), which is weak and compressible; the temperature is irregular; in some cases it remains normal and in others it may rise to 106° or higher. Vomiting, sometimes uncontrollable, is a common symptom, and the patient has little or no desire for food. She is sleepless and restless and throws her arms about, and although she has an extremely anxious and pinched expression on her countenance yet she says "she feels quite well." This condition is known as "euphoria." The milk is absent or it rapidly disappears from her breasts, and the lochia are scanty or absent. The patient gets rapidly worse, the pulse disappearing altogether at the wrist and the conjunctivæ turning yellow shortly before death. The pathology of this condition is that septic micro-organisms get directly into the blood through the lymphatics, where they multiply by myriads, and the severity of the poison is so great that the sensorium is incapable of receiving impressions of pain and the patient feels and says she is quite well. In cases of septicæmia which are not consequent on septic conditions in or around the parturient canal death is so rapid that pathological conditions have not time to develop. Besides local treatment, such as douching and plugging the uterus with iodoform gauze, large doses of alcohol have been recommended with strychnine and digitalis, but no treatment has as yet been proved to be of any avail. The patient dies in from two to five days.

I dare say that the members of this society would consider me guilty of a grave omission if I did not mention something about what was supposed to be a panacea for this condition—viz., antistreptococcic serum. Well, I have never seen a true case of puerperal septicæmia treated successfully with this serum, neither have I ever read of one. I have seen, however, several cases of different forms of sapræmia treated with it without any beneficial result whatsoever, either transitory or permanent. I have also read a few reports of cases of different forms of puerperal sapræmia which were, in my opinion, wrongly diagnosed as puerperal septicæmia and treated by it with alleged good results which I believe were merely coincidences. In some of these cases great importance was attached to the fall of the temperature and the pulse which usually followed the injection of the serum. This might possibly have been due to the profuse diaphoresis caused by the serum and not to any beneficial result of the serum on the patient. I remember treating a patient about the beginning of 1899 who was very ill from puerperal sepsis. On a certain Sunday morning her condition was extremely grave and I decided to inject some antistreptococcic serum. I was, however, unable to obtain it until the following day, but I am happy to say that this patient anticipated me by having a normal temperature the following morning. Had I been fortunate enough to have had the serum at hand and to have used it that Sunday I might possibly have attributed her improved condition on the following morning to the use of the serum, and this case might possibly have figured in the annals of medical literature.

Now it appears to me, from the very small number of supposed successful cases reported and considering that the antistreptococcic serum is being and has been used very extensively throughout the British Islands and by the ablest obstetricians, that the good results claimed for it have not been sustained. I am also inclined to believe that these reported successes have been merely coincidences and especially so as these cases were apparently cases of sapræmia and not puerperal septicæmia as reported. I went into the shop of a well-known local druggist recently and asked if he kept any antistreptococcic serum. He said that he used to keep a quantity of it but that he did not keep it now as it was never asked for. From this fact, I suppose, puerperal septicæmia has entirely disappeared from this whole district.

III.—PYÆMIA.

Pyæmia is due to the absorption of a septic thrombus in one of the uterine sinuses into the blood-stream by means of the veins. It may spread by continuity of the veins or septic emboli may form and be carried and lodged in any part of the body, causing localised purulent inflammations or abscesses. The symptoms may develop up to the twenty-first day following the confinement, or perhaps later, by a rigor which is usually followed by a succession of rigors. Its symptoms, sequelæ, and treatment are similar to those of surgical pyæmia.

Now, speaking generally, it is well to remember that any obstetrical operation—even the making of a vaginal examination—is similar to a surgical operation and the sources of infection are exactly similar. You will find it stated in Lusk's "Science and Art of Midwifery," which is one of

[2] Lusk: Science and Art of Midwifery, p. 666, Plate IV.

the very best of modern obstetrical text-books, that "the ordinary carriers of infection are unquestionably the unclean hands, instruments, utensils, clothing, wash material, and the like, which are brought in contact during or after labour with the genitals of the female." Now, this is perfectly true if we have a healthy patient to deal with, but I believe it is quite possible for an unhealthy patient to infect herself. By unhealthy I mean a patient suffering from a gonorrhœal vaginitis or other form of septic vaginitis, or a patient who has suffered on a previous occasion from some septic condition of the internal genitals.

I have not said much about the bacteriology of puerperal sepsis because this matter is at present undergoing investigation and definite conclusions have not yet been formed, and I do not think that until they are formed we can say anything definite as to the use or value of antistreptococcic serum. It is, I believe, possible to grow cultures of streptococci from some samples of this serum, and besides, by injecting a patient with a quantity of this serum it is quite possible to produce a condition known as antistreptococcic neuritis—a condition which has been observed not only in this country but also on the continent and which, if it occurred, would materially prolong the puerperium.

Now there are a few rules which, I think, if they were strictly observed would materially lessen the prevalence of puerperal sepsis.

1. The thorough disinfection of the patient's external genitals and the hands and forearms of the medical attendant and the nurse, prior even to a vaginal examination. It is very easy to understand how, when a vaginal examination is made with fingers which have not been thoroughly washed and disinfected, material may be carried into the vagina which will be rubbed off the fingers and remain there. This material may in some instances be washed away by the liquor amnii, but in a certain proportion of cases it will remain there and cause decomposition of the lochia or perhaps it may get into some of the fissures of the vaginal wall consequent on parturition and either set up acute inflammation or perhaps cause acute sepsis itself.

2. The abolition of routine ante-partum and post-partum douching. The three principal solutions used for this purpose are corrosive sublimate, creolin, and carbolic acid. Corrosive sublimate solution has no advantages over creolin solution and has several decided disadvantages. If it is used for ante-partum douching, besides washing away Nature's antiseptic lubricant[3] (the vaginal mucous secretion), owing to its astringent properties it hardens and corrugates the vaginal mucous membrane, predisposing to extensive fissuring of the vaginal wall and a large laceration of the perineum during parturition, thereby considerably increasing the danger of septic infection. When used post-partum it does not act as an antiseptic because the mercury unites with the albuminous constituents with which it comes in contact, forming an insoluble albuminate of mercury, which is inert. This remains adherent to the surface of the parturient canal, being absorbed into the system later, and causes severe diarrhœa or diarrhœa with melæna (symptoms of corrosive sublimate poisoning). Besides, by hardening the surface of the parturient canal it prevents the natural secretions from taking place, predisposing to subinvolution of the uterus and consequent metritis and endometritis. Creolin and carbolic acid solutions (half an ounce to one gallon) are quite free from these disadvantages. In giving a uterine douche it is not a question of the amount of harm you can do to the bacteria inside the uterus, as this must necessarily be associated with serious injury to the patient. It is more a question of washing away the bacteria out of the uterus, without at the same time doing further injury to the patient, consequently it is the quantity and not the quality of the douche which is important. Routine ante-partum and post-partum douchings are not only unnecessary but are often dangerous.

3. All instruments used during an obstetric operation should be aseptic and when not in use should be kept in aseptic cases.

4. The proper conduct of the third stage of labour. This means, briefly, conducting the third stage with the patient on her back, the obstetrician's hand on the fundus, and waiting until the placenta comes naturally into the vagina before expressing it. If the placenta does not come naturally into the vagina within half an hour massage may be used to the fundus and gentle expression. In case the membranes get caught the placenta should be lifted gently and the membranes twisted so as to secure their coming away entire. The placenta and membranes should be now examined and if any large piece of either be retained steps should be taken to remove it. The uterus should be well contracted before the binder is applied.

5. The strict limitation of vaginal examinations. In an ordinary case where there is no unusual delay one vaginal examination is sufficient, made after the rupture of the membranes to ascertain if there is a prolapse of the cord. Any further information, especially as regards the position of the fœtus, can be more easily and more accurately obtained by means of abdominal palpation.

6. The disuse of all so-called "aseptic lubricants." The use of lubricants is only a means of carrying infection into the parturient canal and preventing the infection from being washed away by the liquor amnii. Lubricants are absolutely unnecessary, just as they are unnecessary in performing an abdominal section except where the patient has sores on the vulva or vaginal wall, in which case a practitioner should use them for his own safety. The commonest so-called aseptic lubricant is carbolised vaseline. It has been proved to be a good culture medium for bacteria, the vaseline protecting the micro-organisms from the action of the carbolic acid. I once saw a large puerperal ulcer which I believe was directly due to the use of this lubricant.

7. The immediate suturing of all perineal lacerations, not only for the sake of the patient's comfort in after life, but also to diminish the extent of surface liable to infection.

Newcastle-on-Tyne.

[3] The Bacteria of the Vagina and their Practical Significance, by J Whitridge Williams, American Journal of Obstetrics, October, 1898.

THE ETIOLOGY OF SCARLET FEVER.

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IN the *Berliner Klinische Wochenschrift* of July 2nd and 9th there appeared an article by Adolph Baginsky and Paul Sommerfeld in which they announce the discovery of a micro-organism whose constant presence in the throat secretions and blood of patients suffering from scarlet fever causes them to believe that it is probably the causative factor of this disease. It is this article that has inspired me to a further communication, as well as a desire to present to the medical profession the evidence that has so far accumulated favouring the view that the diplococcus scarlatinæ, the germ discovered by me, is the cause of scarlet fever. The only notice taken by Baginsky and Sommerfeld of my investigations into the cause of scarlet fever is the statement that I had found a diplococcus resembling a very large gonococcus, which organism was considered by me as being the cause of scarlet fever. As the source on which this statement was based they mentioned a leading article on the subject which appeared in THE LANCET of Nov. 18th, 1899 (p. 1385). This article dealt with a preliminary report made on the subject under consideration. I mention this fact, not because I feel in the least hurt by receiving such scant consideration at the hands of Baginsky and Sommerfeld, but for the reason that if they had taken the trouble to read some of the later contributions by myself and others on the diplococcus scarlatinæ they would not have failed to notice the similarity in many particulars of this germ with the one whose discovery they announce. I do not presume to state positively that these two germs are identical—in fact, this would be almost impossible without having seen their cultures; but I will take the liberty to compare certain parts of the description of their organism with those made of the diplococcus scarlatinæ. The reader may then judge for himself whether there is any similarity or not. In order not to be accused of any inaccuracies or twisting of terms I shall give Baginsky and Sommerfeld's statements in German exactly as they appeared in their article. Before beginning this comparison, however, I will say a few words in regard to the term "streptococcus."

In recent medical literature it is quite common to find an organism described as a streptococcus when a culture shows short chains of three or four cocci mixed with single cocci. I have even seen an organism described as a streptococcus where an examination showed perhaps one or two short chains in a microscopical field filled with single cocci. It

appears to me that the term "streptococcus" should be reserved for an organism the cultures of which show the chain form predominating, the chains being well defined and not simply an accidental arrangement of three or four cocci of perhaps different size and shape. In ordinary life one would hardly call three pieces of iron, each of different size, when joined together a chain. This statement is made because we are about to deal with an organism that has been described as a streptococcus but which does not seem to conform with the proper conception of the term "chain coccus."

Baginsky and Sommerfeld describe the morphology of their germ as follows: "In direkten aus Blut in den Organen entnommenen Trockenpräparat erkennt man zu 2-3 gelagerte runde Keime, also Diplokokken oder kürzeste Ketten, hie und da auch wohl als Tetraden gelagert."[1]

In an article published by me[2] I made the following statement in regard to the diplococcus scarlatinæ under the heading "Morphology": "In young cultures grown from the blood of a scarlet-fever patient the germ is usually seen as a diplococcus, both segments of which are globular. Streptococcus forms are occasionally, though rarely, met with, as are also single cocci." "Tetrads are frequently seen and probably denote the beginning division of the organism." It would be very peculiar if two observers who have each examined over 300 cases of the same disease should find two entirely different germs whose morphology at the same time bore such close resemblance. So much for the primary blood examinations. As we continue our comparison certain discrepancies apparently appear. I shall again quote from the article by Baginsky and Sommerfeld: "Die Morphologie der so dargestellten Mikroben ist folgende; von wechselnder Länge; in solchen von 3-4 Individuen, indess auch in langen geschlängelten Ketten bis zu 50 Gliedern und darüber. Der Keim des Streptococcus ist meist kreisrund, zuweilen allerdings auch abgeplatten und zwar in der Richtung senkrecht zur Kette, so dass zwei mit den breiten Seiten aneinander liegen. Studiert man einzelne Glieder der Ketten genauer in gefärbten Präparaten so erkennt man vielfach Diplokokkenformen, indess nicht immer, andere erscheinen als kleinere oder grössere runde Körner. Die Form war, wie man erkennt, äusserst wechselnd und wandelte sich je nach den Medien, in welchen die Cultur weiter poussirt wurde. In direktem Präparat als Diplokokken aufgetretene oder als kurze Kettchen erscheinende Formen wuchsen in alkalischer Peptonbouillon zu langen Ketten, die z. Th. bei der Umzüchtung auf Agar und bei der Thierpassage sich wieder in kurze Ketten von 3—6 Gliedern umwandeln lassen. Hierbei variirte auch die Grösse des einzelnen Keimes aus demselben ursprünglichen Stamm in mannigfachster Weise."[3] In the article referred to[4] I made the following statement in regard to the morphology of the diplococcus scarlatinæ: "A diplococcus polymorphous in character, but resembling as ordinarily seen in slides made from fresh cultures grown on *my medium* (earth agar), a very large gonococcus. This biscuit-shaped appearance is best seen in specimens that have been but lightly stained. Tetrads are frequently seen, and probably they denote the beginning division of the organism. In very old cultures grown under favourable conditions it shows as an enormous coccus having a slight cupped appearance, the dividing line between the two portions being very indistinct in the more deeply stained specimens. By the division of the large diplococcus a number of smaller organisms are formed which group together and do not appear as diplococci during the very early stages of their growth." This description of the organism was made from cultures grown on earth agar, while that of Baginsky and Sommerfeld showing long chains was made from cultures grown in alkaline peptone bouillon (vide ante). It is of importance to remember this fact, as the morphology of the germ varies according to the medium in which it is grown. ("Die Form war, wie man erkennt, äusserst wechselnd und wandelte sich je nach den Medien, in welchen die Cultur weiter poussirt wurde.") It is this great variability in form when grown on other media than earth agar which caused me to think—as I mentioned in the article in the *New York Record*—during my early experience that the growth upon plain agar, &c., was a contamination. Jaques[5] who studied cultures of the diplococcus scarlatinæ grown on the ordinary media says in regard to its morphology: "This germ has a wide morphology. Sometimes one stage and then another will become accentuated according to the environment and nutrition. Sometimes conditions are favourable to its growth in chains and the culture will show streptococcus form. In another case it will grow as a staphylococcus and still in another as a diplococcus." This variability of form which characterises my germ, as well as that which Baginsky and Sommerfeld claim as a new discovery, is further shown by the description of the diplococcus scarlatinæ by Gradwohl,[6] who states that it shows no permanence of morphologic character, as well as by the following statement made by me in an article[7] on the subject: "This germ varies greatly in size and shape, and although the form usually seen in primary cultures grown on the earth agar is the diplococcus resembling a very large gonococcus, still a primary culture may show it in one of its other forms. In order to prove the identity of the organism it becomes necessary to make successive transplantations of the culture from one tube to another, allowing it to grow for a few days at the least before transferring to a fresh tube. The different forms can be best studied by beginning with a culture of the large diplococcus; by transferring a loop of this culture to another tube of earth agar and allowing it to grow for a few days and then making an examination of the growth it will be found to consist largely of tetrads; by the still further division of the tetrads in the next subculture small diplococci are formed, and through the division of these single cocci," &c. Another point of semblance between these two findings is the variability in virulence which both germs seem to possess in common.

Baginsky and Sommerfeld state: "Bei allen Thieren war die Virulenz eine äusserst variable"[8]; and again, "Die Virulenz der Kokken ist nicht nachhaltig und geht leicht verloren, verminderte sich zumeist schon erheblich nach wenigen Tagen."[9] This is a fact to which I have repeatedly called attention when speaking of the diplococcus scarlatinæ. I will not attempt to draw any comparison from the biologic characters of the two germs, as the following statement by Baginsky and Sommerfeld excludes such a course: "In unseren eigenen Culturen waren wir vergeblich bemüht gewisse Eigenheiten des Wachsthums in den einzelnen Stämmen zu fixiren; immer wieder variirte ebensowohl der einzelne Keim der Ketten in Form und Grösse, wie auch die Virulenz und selbst das biologische Verhalten in den Nährmedien, so dass wir die Differenzirung einzelner Formen schliesslich aufzugeben gezwungen waren."[10] In looking over the comparison made in the preceding remarks I think the reader cannot fail to be impressed with the fact that in all probability the germ found by Baginsky and Sommerfeld in their primary examinations was identical with the diplococcus scarlatinæ, as the description given of it by them and my description of the germ as seen in primary cultures have almost the same wording. Of course, a point of difference is that Sommerfeld and Baginsky, in the description of the growth of their germ on agar, &c., speak of it as a streptococcus, while this term cannot be applied to the diplococcus scarlatinæ as ordinarily seen. However this may be, the germ found by Baginsky and Sommerfeld in their primary blood examinations was certainly not a streptococcus but a

[1] "In a dry preparation taken directly from the blood in the organ micrococci are seen arranged in groups of two or three—that is to say, diplococci or very short chains; here and there also tetrads appear."—ED. L.

[2] New York Medical Record, Sept. 2nd, 1899.

[3] "The morphology of the microbes is as follows: of variable length; generally consisting of three or four units, but sometimes arranged in long twisted chains. The nucleus of the streptococcus is usually circular but sometimes flattened, and lying in a direction perpendicular to the chain, so that two lie with their broad sides together. On observing individual cocci more closely in stained preparations numerous diplococci are seen, which occasionally contain larger or smaller circular nuclei. As will be seen, the form was very diverse and varied according to the medium in which the culture was grown. In fresh preparations containing diplococci or short chains these microbes when inoculated in alkaline pepton-bouillon grow in long chains, which can partly be again changed to short chains when transferred to agar or passed through animals. At the same time the size of the individual cocci, though derived from the same source, vary greatly."—ED. L.

[4] New York Medical Record, Sept. 2nd, 1899.

[5] The Journal, May 26th, 1900, p. 1299.

[6] Philadelphia Medical Journal, March 24th, 1900, p. 682.

[7] New York Medical Record, Oct. 7th, 1899, p. 33.

[8] "In all animals the virulence was extremely variable."—ED. L.

[9] "The virulence of the cocci is not lasting and is easily lost; it is considerably lessened after a few days."—ED. L.

[10] "In our own cultures we endeavoured in vain to establish certain characters of the growth in separate generations; but again the individual units of the chain always varied in form and size as well as in virulence and even in the biological behaviour in the nutrient media, so that finally we were compelled to abandon the differentiation of individual forms."—ED. L.

diplococcus. As they themselves say: "Zu zwei bis drei gelagerte runde Keime, also Diplokokken oder kürzeste Ketten." If a germ which shows such an arrangement is a streptococcus, why, then, every known coccus is a streptococcus. In their further description they speak of chains containing 50 or more cocci being found in the bouillon cultures. Such lengthy chains my diplococcus scarlatinæ never forms, and from an experience based on the examination of hundreds of cases of scarlet fever I feel justified in stating that a long streptococcus, an organism to which the name streptococcus can be properly applied, cannot be found in cultures made from the blood of an uncomplicated case of this disease. If it is present it is a sign either that the case is not an uncomplicated one or that the culture is contaminated. The impression made upon me by the reading of Baginsky and Sommerfeld's paper was that they had in their culture the diplococcus scarlatinæ mixed in some instances with a long streptococcus the presence of which was accidental. Streptococci are present in the pharyngeal mucus of a certain proportion of cases of scarlet fever, but not by any means invariably, nor do they ever compose the bulk of the culture. So much for the present in regard to the discovery of Baginsky and Sommerfeld. Let us now consider the evidence in favour of the view that the diplococcus scarlatinæ is the cause of scarlet fever.

1. *Evidence showing that the diplococcus scarlatinæ is a germ not heretofore described.*—In March, 1899, at a meeting of the Chicago Medical Society, I presented a preliminary report, together with a demonstration of specimens of a germ whose constant presence in a series of about 30 typical cases of scarlet fever had led me to believe that it was probably the cause of this disease. This germ, when grown upon a medium especially devised by me, showed certain peculiarities in its morphology—very large gonococcus form—and growth whereby it could be distinguished from other germs. A very careful and exhaustive search in bacteriological literature made prior to this announcement had failed to show the description of any germ resembling the one described by me. Since this preliminary report was published I and others have further elaborated the matter without finding anything conflicting with it. It is true that the large gonococcus form is not a constant feature of this organism, nor did I ever claim this to be the case; but it is the usual form seen when grown on the earth agar and one which serves to distinguish it from other organisms. This form, if not present in the primary cultures, can always be obtained by successive transplantations on the earth agar.[11] A full description of the different forms of this organism appears in the June issue of *Medicine* and in the *New York Medical Record*, Sept. 2nd, 1899. Numerous findings of diplococci and streptococci in scarlet fever had been recorded before I announced my discovery, and may give rise to the view that I presented nothing new. While it is possible that some of these discoverers really had the diplococcus scarlatinæ in their cultures they at best only described one of its forms, and none prove the constant presence or the relationship of the germ to the disease. Neither did they reproduce the disease or show any way by which the germ could be distinguished from others. Thus Crajkowski[12] in 1895 announced that he found diplococci in the blood of 16 cases of scarlet fever; this organism presented nothing characteristic, nor did Crajkowski follow up his examination as far as can be seen by searching the literature on the subject. That the diplococcus scarlatinæ is a *new* germ is further shown in an article by Gradwohl,[13] who gives a very good description of its biological characters.

2. *Evidence showing that the diplococcus scarlatinæ is constantly present in scarlet fever.*—The presence of this germ in cases of the disease has been well proved. Thus Gradwohl[14] found it in seven consecutive cases and Jaques[15] demonstrated its presence in every one of a large number of cases examined. I myself announced before the Chicago Pediatric Society in December, 1899,[16] that I had found it in 300 successive cases of scarlet fever and scarlatinous sore-throat. Page[17] of Boston announced that he had found a germ corresponding to the description of the diplococcus scarlatinæ in a number of cases. Besides these published findings I have personal knowledge of its having been found in the blood, throat secretions, and scales of scarlet fever patients by a number of other competent observers whose results have not as yet been published. These results have been so uniform that I am absolutely certain of my ability to demonstrate the presence of the diplococcus scarlatinæ in the blood, throat secretions, and scales of every typical case of scarlet fever given me for examination.

3. *Evidence showing that the diplococcus scarlatinæ is a pathogenic micro-organism.*—This germ is pathogenic for mice, swine, and guinea-pigs. Mice are most susceptible, and a small quantity of a virulent culture injected subcutaneously will sometimes kill the animal in an hour's time. As a rule, death takes place within 12 hours of the time of inoculation. Swine, as a rule, show no reaction from the subcutaneous injection unless a very large quantity of a virulent culture is used. Swine are known to be insusceptible to the influence of most pathogenic germs when injected subcutaneously. Even the bacillus of hog cholera produces but little effect when administered in this manner; therefore it is not surprising that the diplococcus scarlatinæ is not very pathogenic when injected subcutaneously. Intra-abdominal injections give rise to grave symptoms, and if a sufficient amount of a virulent culture is used it will cause the death of the animal. The usual method which I have used in order to produce typical symptoms of scarlet fever in swine has been to inject a culture grown on agar and mixed with sterilised water directly into the circulation. For this purpose either the ear veins or the femoral veins were used. The amount of culture used for these experiments varied according to its virulency; usually, however, one cubic centimetre was sufficient, and in some instances caused the death of the animal a few days subsequent to its injection. Guinea-pigs usually succumb to the intra-abdominal injection of 0·1 cubic centimetre of a virulent culture. During the first few days after inoculation these animals usually showed but little signs of sickness; then they began to refuse food, gradually became more and more emaciated, and death occurred as a rule from 10 to 14 days after the injection was made. Subcutaneous injections generally were without result. These observations have to a great extent been verified by the experiments of Gradwohl.[18] Rabbits and white rats appear to be but slightly, if at all, susceptible, while cats and dogs are immune. The diplococcus could, as a rule, be easily obtained from the organs of the susceptible animals after death and from their blood during life. Cultures taken from the blood of the ventricles and from the spleen generally showed a pure growth.

4. *Evidence showing that scarlet fever can be reproduced in animals by the diplococcus scarlatinæ.*—The diplococcus scarlatinæ is the first germ that has ever been discovered through whose agency a disease has repeatedly been produced, which has been recognised by competent men as being apparently identical with scarlet fever as it appears in human beings, so far as the rash and scaling are concerned. The animals used to reproduce the disease were white swine. When such an animal receives an intravenous injection of a virulent culture of the diplococcus scarlatinæ it will usually sicken within a few hours, there will be a rise in temperature, the animal will become restive and refuse food; after three or four days, as a rule, a decided reddening of the skin will appear, which lasts from one to two days, to be followed within a week to two weeks by profuse scaling. Sometimes the eruption is more of a papular character and the reddening not well marked, but usually it can be easily demonstrated, especially if the colour of the animal is compared with that of one in good health. The disease has been reproduced by the writer in a considerable number of swine, the number being large enough to exclude the possibility that it was merely an accidental phenomenon. These results have been further verified by Gradwohl[19] and Jaques.[20]

5. *Evidence showing that the pathologic changes in the organs caused by the diplococcus scarlatinæ resemble those of scarlet fever.*—As an example of the gross changes produced by the diplococcus scarlatinæ I will give a brief statement of the findings in a young pig which was inoculated in the pathological laboratory of Rush College on Feb. 17th, 1900. About one cubic centimetre of agar culture was rubbed up with five cubic centimetres of sterilised water and injected into the femoral vein. On the 24th the animal was found dead and on post-mortem examination the following changes

[11] New York Medical Record, Oct. 7th, 1899, p. 33.
[12] Centralblatt für Bakteriologie, 1896.
[13] Loc. cit.
[14] Loc. cit. [15] Loc. cit.
[16] The Journal, Feb. 24th, 1900.
[17] Journal of the Boston Society of the Medical Sciences, June, 1899.
[18] Loc. cit.
[19] Loc. cit. [20] Loc. cit.

were found: "Spleen is enlarged and congested; Malpighian bodies stand out prominently. Kidneys show cortex pale in colour, with a few small hæmorrhages near surface; capsule comes off easily; pelvis of kidney is congested and drips blood on section; pyramids stand out plainly. Liver shows numerous whitish necrotic areas and is congested; blood drips on cutting. Lymphatic glands of neck are enlarged, varying in size from a Lima bean to that of a hickory nut. Slight amount of effusion appears between layers of pericardium. Walls of intestine are congested and show numerous hæmorrhagic spots. Other organs are apparently normal." The mice and guinea-pigs that were examined post mortem also usually showed gross signs of nephritis. In regard to their other organs nothing positive could be stated on a macroscopical examination. The organs of a considerable number of animals were preserved for microscopical examination the results of which will be reported later. Gradwohl has confirmed the occurrence of nephritis in swine and guinea-pigs after inoculation with the diplococcus scarlatinæ.

6. *Evidence showing that the disease produced through the agency of the diplococcus scarlatinæ is of a contagious nature.*—There are a number of facts on record which go to prove that this germ produces a contagious disease. Thus, Jaques[21] stated that when a healthy pig was placed with two pigs that were scaling after having been inoculated with the diplococcus it developed a rise in temperature lasting several days, followed by scaling, thus showing that it had evidently contracted the disease by contact. Gradwohl, in an article previously quoted, states that if a healthy mouse be put in a cage in which another mouse that has been inoculated with the diplococcus scarlatinæ has been kept the healthy mouse will sicken and die and will show the diplococcus scarlatinæ in its organs post mortem. I have seen similar results occur a number of times while carrying on my own experiments, and I think that it must be admitted that the contagious nature of the disease produced is extremely suggestive and speaks strongly in favour of the claim that the diplococcus scarlatinæ is the causative factor of scarlet fever.

7. *Influence on blood of scarlet fever patients on the activity of the germ.*—Under this heading I will quote a few experiments described in a paper[22] by me, to wit: "A loop of pure culture of the diplococcus was diluted with 15 minims of distilled water. One-half of this was poured over a plate of glucose-agar; to the other half were added 10 drops of blood from a patient who had just recovered from an attack of scarlatina, and this mixture was poured over a similar plate. Both were put into an incubator, the temperature of which was kept at about 36° C. At the end of 24 hours the plates were removed. The plate made from the culture without the addition of the blood showed innumerable minute colonies of the diplococcus, while on that to which the blood had been added there were only a very few colonies. Presumably these had grown, because from the tendency to clump some of them had not been exposed to the action of the blood. This experiment was repeated five times with almost identical results. Each time there was a slight growth of the culture to which the blood had been added, but the growth was so much more profuse in the one without this addition that the inhibitory action of the scarlet fever blood on the growth of the germ could be plainly demonstrated. Blood from a child five months old where the possibility of a prior infection with the germ could safely be excluded produced no inhibitory action. The other experiment consisted in inoculating four ordinary grey mice, each of which received five minims of a solution of a virulent culture of the diplococcus scarlatinæ in distilled water. Two of the mice had previously received by subcutaneous injection five minims each of blood serum taken from a patient recently recovered from scarlet fever. The two animals that had not received the blood inoculations died within 18 hours, while of the two that had been injected with the blood one lived about 40 and the other 72 hours." These experiments have since been repeated a number of times with practically the same result. In making the first set of experiments quoted it was also necessary to use a virulent culture, as one that has been grown a long time on artificial media is not so sensitive.

8. *Finding of the diplococcus scarlatinæ in throat secretions of patients with scarlatinous sore-throat, a further proof of its specific character.*—In an article on the etiology of acute tonsillitis[23] I made the following statement regarding the diplococcus scarlatinæ: "It is not only invariably present in the angina of scarlet fever, but during an epidemic of this disease it will frequently give rise to an acute tonsillitis without any eruption, although not infrequently these cases are followed by a nephritis and sometimes by desquamation. It may sound like a bold statement to make, nevertheless I am fully convinced that a person who has had an attack of acute tonsillitis due to the diplococcus scarlatinæ is rendered immune against scarlet fever, or, in other words, that this form of angina is nothing more or less than scarlet fever without the presence of an eruption." And, further, "the contagion from a case of scarlatinous sore-throat is capable of giving rise to typical scarlet fever in another person who has been exposed to it." The occurrence of scarlatina sine eruptione is something that has for a number of years been accepted, more or less generally, but it could not be proved positively, as the causative germ of scarlet fever was not known. Admitting for the present that the diplococcus scarlatinæ is the cause of scarlet fever it will be found that during an epidemic of this disease cases of scarlatina sine eruptione are of far greater frequency than has generally been supposed to be the case. Your sceptic may cry out that the finding of the diplococcus scarlatinæ in so many cases of apparently simple sore-throat speaks strongly against its being a specific micro-organism. On the contrary, it is just this fact which goes a long way to prove its specific nature. If it was only present in typical cases of scarlet fever how could we explain those cases in which one child in a family has scarlet fever while several others at the same time develop only a tonsillitis, followed perhaps by nephritis and desquamation? The contagion must necessarily be the same, for frequently these cases of angina give rise to an attack of typical scarlet fever in another member of the family. Furthermore, if these cases of angina were not scarlatina sine eruptione, how could we account for the fact that so many people escape scarlet fever? The finding of the diplococcus shows that they had in the majority of instances been rendered immune by an attack of angina caused by this germ and that the eruption of scarlet fever is simply one manifestation of the activity of this micro-organism. The presence of an eruption is not absolutely necessary to make a diagnosis of scarlet fever, however inconsistent this may seem when the name of the malady is considered.

9. *Growth in milk without affecting this medium a fact in favour of its being the cause of scarlet fever.*—In speaking of the diplococcus scarlatinæ a leading article in the *Interstate Medical Journal*, March 1st, 1900, states: "It is interesting to note in the description of the biologic characteristics of this diplococcus scarlatinæ that the micro-organism grows in milk, but does not produce any visible change in it, such as coagulation or digestion, &c. This will serve to explain the dissemination of this disease, which has been from time to time traced to the infected milk. It is important from a public health standpoint. And the fact that cows are known to be susceptible to scarlet fever, taken into consideration with the fact that the diplococcus scarlatinæ is probably excreted in the milk of these animals, will explain how this milk which spreads the disease is infected. Of course, it might also be infected by means of contamination with the hands of patients with scarlet fever or from milkers or dairymen in whose families scarlet fever is present."

10. *Finding of the diplococcus scarlatinæ in cases of surgical scarlet fever demonstrates its diagnostic value.*—In the May number of the *Chicago Medical Recorder* for 1900 there appeared a report of a case of double crypto-orchidism complicated by scarlet fever by Dr. Edward Ochsner. The patient 18 hours after the operation for the relief of his trouble suddenly developed a high temperature together with vomiting. On the following morning the patient showed a scarlet rash all over his body. The only things that had come in contact with the patient prior to the appearance of the rash were saturated solutions of boric acid and alcohol dressings, no iodoform being used. The question naturally arose whether the rash was of a simple septic nature or true scarlet fever. I made cultures from the blood, obtaining a pure growth of the diplococcus scarlatinæ. A similar finding was obtained from the patient's urine, which showed traces of albumin. Subsequently the patient scaled. Since the publication of the above report I have again had an opportunity to examine blood and throat cultures taken from a patient

[21] Loc. cit.
[22] The Journal, Feb. 24th, 1900.
[23] Interstate Medical Journal, March, 1900, p. 120.

developing a sudden rise in temperature and scarlet rash after a slight operation upon the heel. The result of the examination of these cultures also showed the case to be one of scarlet fever. I mention these cases because in all probability a large number of cases of so-called septic rashes are nothing more or less than true scarlet fever.

In concluding, I wish to state that all the experiments quoted are open to investigation and that I feel confident that unprejudiced and painstaking investigators will further confirm what has been said. Allowing that these statements are based upon facts, I think it must be admitted that the diplococcus of scarlatinæ fulfils all of Koch's laws and is therefore entitled to some consideration at the hands of those engaged in a search for the solution of the etiology of scarlet fever.

Chicago.

A LYMPHATIC ANÆMIA MET WITH IN CHILDREN.

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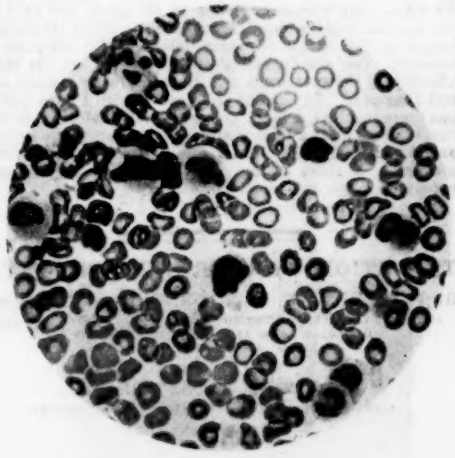
NEITHER in any special work on the diseases of children nor in any work on systematic medicine have I been able to find an account of, or any reference to, a form of anæmia which is not uncommon in children and which, I believe, is never met with in the adult. The following short description of the characteristic signs and symptoms of the disease may therefore be found of sufficient interest to be worthy of a place in the pages of THE LANCET.

The disease is one of childhood and the signs and symptoms are so characteristic that it cannot be mistaken for any other form of anæmia or affection of the lymphatics. Of 23 cases of which I have taken notes during the last few months the ages range from three to 16 years and 18 of these patients were between three and 11 years of age. As to sex, 19 of the patients were boys and four were girls. In no case have I been able to find a history of an acute stage or sudden onset. The disease runs a very chronic course and recovery is the rule. The history of the cases shows that the glandular affection is in no way connected with those enlarged glands which usually become (or are from the first) tuberculous, and the characteristic adenitis and the chronic course mark it sharply off from glandular fever. The anæmia may or may not be very marked, but it is, of course, readily recognised; the adenitis is always marked, but it is easily overlooked because none of the glands are large enough to attract the eye. The form of adenitis and the groups of glands affected are characteristic of the disease. The glands are small and hard, and they are always numerous in the cervical triangles and in the groins. The axillary glands are never affected. That the bronchial glands are frequently, if not always, enlarged one may safely infer from the fact that cough is in many cases a troublesome symptom when there is nothing in the lungs to cause it. The mesenteric glands are probably also affected but abdominal symptoms are rare. In a large proportion of cases the spleen is distinctly increased in size. Catarrhal pneumonia of one or both bases is not uncommon; in one of the cases there was pleural effusion and in another there were well-marked signs of thickened pleura. Examination of the blood shows a decrease of the red and a large increase of the white corpuscles, and of the latter the increase of the large uninucleated corpuscles is very striking. This is well seen in the accompanying illustrations.[1] Normally, it is said, lymphocytes form from 15 to 20 per cent. of the white corpuscles, the large uninucleated from 6 to 8 per cent., the multinucleated from 70 to 80 per cent., and the eosinophilic from 2 to 4 or 7 per cent. I have stained a large number of films of the blood of children suffering from this lymphatic anæmia and on counting the leucocytes have found that the lymphocytes formed from 12 to 13 per cent., the large uninucleated from 20 to 39 per cent., the multinucleated from 41 to 63 per cent., and the eosinophilic from 2 to nearly 7 per cent. The increase of the large uninucleated corpuscles from 6 to 39 per cent. is thus seen to be very marked. In two cases the multinucleated and the large uninucleated corpuscles were present in practically equal numbers, and very few small lymphocytes were seen. The blood films were stained with eosin and hæmatoxylin, and the illustrations show two typical fields.

[1] The Diseases of the Blood. By Alfred C. Coles, M.D.

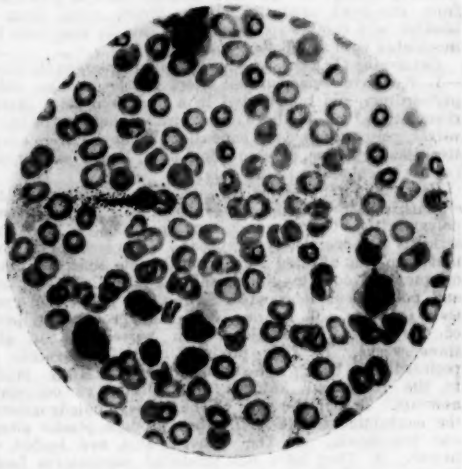
FIG. 1.



Shows five multinucleated, four large uninucleated corpuscles, and one small lymphocyte.

With regard to the family history in five cases a parent or one of the other members of the family suffered from phthisis, and in eight cases phthisis appears in the history of the grandparents, uncles, or aunts. Otherwise nothing of interest was noted in the family histories, and some of the most typical cases showed no trace of any direct or indirect connexion with tuberculosis.

FIG. 2.



Shows five large uninucleated corpuscles and two lymphocytes.

As to the signs and symptoms they are so characteristic that it would be uninteresting and tedious to quote cases in detail. There is always a history of gradually failing health, the child becomes listless and easily fatigued, loses flesh, and becomes anæmic. Cough is frequently a troublesome symptom and it is usually worst at night; occasionally there are night sweats. There is great loss of appetite; the tongue

is as a rule clean, and the bowels are usually constipated. In a typical case the cervical triangles are packed with small, hard glands, and in the groin a chain of similar glands is always found along Poupart's ligament. Then in most cases the spleen is distinctly enlarged.

With regard to treatment, arsenic and iron naturally suggest themselves as the best remedies and on these, with cod-liver oil occasionally given in addition, the patients usually do well. Improvement is slow in all cases, but as a rule the appetite rapidly improves, the child regains his naturally bright spirits, is not so easily fatigued and becomes less anæmic. The glands, except in a few cases, are not readily affected by the treatment but they gradually become softer and disappear. In none of the cases which I have watched has there resulted a local or general tuberculosis. In many cases the cough is a most troublesome and obstinate symptom and it is difficult to convince parents that the lungs are not affected. In those cases a sedative mixture at night may be necessary to secure undisturbed sleep.

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THE ETIOLOGY OF RHEUMATIC FEVER

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(*Concluded from p. 869.*)

GENERAL CONCLUSIONS AND REMARKS.

Concerning the isolation of the diplococci.—1. We have demonstrated these diplococci in eight successive cases of acute rheumatism. 2. They have been present in five cases in pure culture. 3. We have obtained them (*a*) from the blood of living patients suffering from acute rheumatic pericarditis; (*b*) from the pericardial fluid and from the fragments of granulations removed from the valves after death; and (*c*) from the throat of the living patient suffering from rheumatic tonsillitis.[1] 4. We have isolated them and grown them in an acid medium and also upon blood agar. 5. They have also grown in the pericardial fluid which we proved on those occasions to be acid. 6. They do not thrive on ordinary media. 7. We have isolated them in pure culture from the joint exudation, heart blood, urine from the bladder, and cerebro-spinal fluid of rabbits that have been inoculated with a sufficient dosage.

Concerning the demonstration of the diplococci in the tissues.—1. We have demonstrated them in the cardiac valves, pericardium, and tonsils, and in a nodule in fatal cases of rheumatism.[2] 2. We have demonstrated them in the cardiac valves, pericardium, joint exudation, kidneys, liver, connective tissues, pleuræ, cerebro-spinal fluid, lungs, and urine of rabbits inoculated intravenously.

Concerning the results produced by inoculation of these organisms intravenously into rabbits.—1. They produce a polyarthritis, bursitis, and tenosynovitis. 2. This polyarthritis may completely disappear. 3. In some of the joints that have been affected for a considerable time the fluid is opaque and contains fibrin, endothelial cells, mononuclear and polynuclear leucocytes. In other joints the exudation is clear. 4. In one case they produced a paresis of the lower extremities which passed off in about three weeks. 5. They produce multiple valvulitis and pericarditis, both non-suppurative. 6. They produce in the liver and kidneys a condition of coagulation necrosis. This in the case of the kidneys chiefly occurs in the convoluted tubules. 7. They produce plastic pleurisy and pneumonia. 8. The urine is acid and loaded with urates. 9. They have not produced suppurative foci in the viscera. 10. They produce in the myocardium a condition of fatty degeneration and destruction of the muscle fibres analogous to that found in the human heart as a result of severe rheumatic carditis. 11. The clinical symptoms are characterised by multiple painful joint swellings, wasting, with (in the less severe cases) a maintenance of the appetite. There is moderate pyrexia. 12. The heart is affected early; tachycardia, dyspnœa, and irregularity of cardiac action, together with valvular murmurs, pericardial and pleural friction, have all been observed. 13. The clinical symptoms are, on the whole, remarkably constant when the organism is passed from animal to animal, though the tendency is for increase in the severity of the cardiac lesions and diminution in the arthritis.

[1] Since the completion of this paper we have twice isolated them from the urine of a patient suffering from acute rheumatic pericarditis and have demonstrated them in the pleural exudate.

[2] Ibid.

I.—THE MORPHOLOGY AND OTHER CHARACTERISTICS OF THE DIPLOCOCCUS.

We are not as yet in a position to state fully the morphological characteristics of this micro-organism. Our research has been concerned more especially with the elucidation of the symptoms and morbid changes that are the result of their access to the living body. We have, however, ascertained the following details.

1. They are minute cocci associated in pairs, the individual elements of which vary somewhat in size but average 0·5 μ in diameter, as measured by Zeiss's micrometer eyepiece.

2. In liquid media they grow in chains of varying length. In solid media they grow in masses that resemble the arrangement of staphylococci.

3. They grow both aerobically and anaerobically. They may be cultivated upon ordinary media but do not thrive and rapidly lose both their virulence and characteristic appearances. When isolating them from the tissues we have succeeded best with a medium of milk and bouillon slightly acidified with lactic acid, and, on the whole, the anaerobic tubes have proved more suitable to them than the aerobic. When they have been isolated they grow well upon blood agar aerobically at a temperature of 37° C., at which temperature the milk tubes were also incubated. Upon blood agar they form in 24 hours small, raised, yellowish-white, discrete colonies, the average size of which is 0·456 millimetre. The colonies are more or less circular and have, under a high magnification, a slightly granular appearance. By transmitted light they show a darker centre.

4. They stain with the various aniline dyes, though by Gram's method they are easily decolourised. The stain which we have used for them in the tissues and which has given the best result has been carbol-thionin. The metachromatism that is produced with this stain has assisted us in differentiating them from the tissues in which they were lying, for when deeply stained they appear a deep blue, whereas the tissues are usually a light blue or have a red tinge.

II.—THE RELATION OF THESE DIPLOCOCCI TO THOSE ISOLATED BY OTHER OBSERVERS.

There can, we think, be but little doubt that these diplococci are identical with those discovered by Triboulet in 1897 and by Wassermann in 1899. Triboulet isolated them from the blood in acute rheumatism and grew them anaerobically. He also produced in one instance a valvular lesion in a rabbit but did not produce polyarthritis. In spite of this absence of joint lesions he thought these diplococci were the cause of rheumatism. Wassermann originally isolated them after death from a case of rheumatism and produced polyarthritis and tenosynovitis in a series of rabbits. He grew them best on a strongly alkaline medium aerobically, but did not apparently obtain any valvular lesions. In addition to the isolated lesion obtained by these observers the entire picture of rheumatic fever resulted in our cases. We have succeeded with acid but failed with strongly alkaline media.

III.—IS THIS ORGANISM THE CAUSE OF RHEUMATIC FEVER.

In the face of the statements by Achalme, Thiroloix, Bettencourt, Litten, and others, we cannot claim that this diplococcus is the only cause of rheumatic fever. More extended observations will doubtless settle this most important point. That it is one cause we believe to be proved to all practical purposes by this investigation and we believe it highly probable that it will prove to be the cause of all cases of rheumatic fever which conform to the usual type of the disease, for the disease in man, as we have insisted before, is a very definite one and therefore probably caused by a specific micro-organism.

IV.—THE CLINICAL LIKENESS BETWEEN RHEUMATIC FEVER AND THE DISEASE PRODUCED BY THE DIPLOCOCCUS IN RABBITS.

The resemblance between the disease produced in rabbits and the rheumatic fever of man is, we think, a very striking one. There is moderate pyrexia and wasting, and the

occurrence of a painful polyarthritis, which is metastatic and may entirely disappear. The tissues around the joints, such as the tendons and bursæ, are also affected, and the large joints are especially liable to this arthritis. The heart is affected early, even before the joints or irrespectively of the joint-affection. In the severe cases there occur pericarditis, valvulitis, pleurisy, and pneumonia, and the myocardium suffers as it does in acute rheumatism. The urine is acid and loaded with urates. There is no suppuration in the viscera and the peritoneum escapes as it does, as a rule, in rheumatism. In one case following the arthritis there occurred a passing weakness of the hind limbs. We do not venture to explain this, but think it suggestive of paralytic chorea.

The course of the disease is, as in rheumatic fever, prolonged and inclined to recovery unless the dose is a large one. Finally, there is a tendency to exacerbations of symptoms similar to those so frequently observed in the rheumatism of childhood. In this it is well known that even when progress seems to be satisfactory there may be, without assignable cause, a sudden exacerbation of symptoms which may almost as quickly disappear; in the rabbit also these variations may be noticed.

V.—The Demonstration of the Diplococcus in the Tissues.

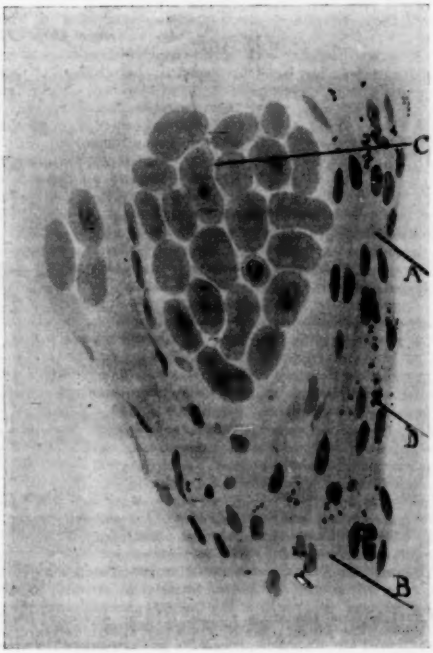
The demonstration of these organisms in the human tissues is not easy. We think that one reason for the difficulty lies in the fact that rheumatic fever is essentially a disease to which there is great resistance. Even in fatal cases the reparative processes are often well advanced at the site of some of the local lesions. Such tissues, too, as the granulations upon valves, the nodules, and the pericardial exudation are among the more difficult of the structures that require investigation under the highest powers of the microscope. The micro-organism, again, is a very minute one and often present in compact masses which are liable to be mistaken for Mastzellen. Their discovery in the rabbit is far easier, for the animal can be killed early in the disease, and it is a point of great interest that numerous diplococci can be demonstrated in the pericardium before any cellular reaction of consequence has had time to develop. The animal tissues have afforded us the very greatest assistance both in localising the diplococcus and in getting a true picture of its appearance in the viscera.

We are not at present in a position to state with confidence the number of diplococci that are present in the human tissues, but have good reason to believe that at some period of the illness they are present in large numbers. Usually they are seen in small clumps, but when they reach a free surface they are sometimes in large masses, although the individual diplococcus is very small. In the short description that is given below of their occurrence in particular regions, such statements as are made are supported by the proof of microscopic demonstration.

1. *Occurrence in the heart.*—The valves of the heart are attacked from within and the diplococci are not at first found upon the surface (Figs. 6 and 7). In both man and rabbits we have examined valves in a very early stage of the local disease and found the diplococci beneath the endocardium in the substance of the valve and at the base in the region of the valve ring. When the connective tissue proliferation they produce in the valve becomes a granulation and breaks down then they may be found on the surface; they may also be found in the connective tissue cells of the valve and chordæ tendineæ. It is especially difficult in our experience to demonstrate them in the necrotic material of an early granulation. They are found in man in the deeper part of the visceral pericardium, in the fibrino-cellular exudation, and in the parietal pericardium. In the rabbit they can be seen in the visceral pericardium and in the parietal pericardium following the course of the blood-vessels. In the heart-wall they are seen sometimes in the areolar tissue near the blood-vessels in the intermuscular septa. In the very earliest stages these organisms can be discovered in these tissues without having apparently caused any reaction, but a proliferation of connective tissue-cells and a free exudation of leucocytes is usually easily recognised as a result of their presence. During the acute phase of rheumatic pericarditis they circulate in the general blood-stream (Figs. 8 and 9).

2. *Occurrence in the nodule.*—The discovery of the diplococci in the rheumatic nodule is, we think, of especial interest, for this lesion above all is looked upon as highly characteristic of rheumatic fever. It is a strong point in favour of the view that these diplococci are the cause of the symptoms of rheumatic fever. Further, it completes the proof of the analogy of this lesion with the valvular and pericardial inflammation—an analogy which has been long suspected by clinicians. In the rabbit the connective tissues near the affected joints are sometimes swollen and gelatinous. In one case a nodule appeared over a vertebral spine and after a month gradually disappeared. Sections of the tissue in this condition show the three zones that are

FIG. 6.



Section through the endocardium part of the heart wall and base of the mitral valve of a rabbit. During life there were evidences of pericarditis and valvulitis with well-marked polyarthritis. The necropsy verified the clinical diagnosis. A, The endocardium. B, The base of the valve. C, Transverse section of cardiac muscle. D, The diplococci. Stain, carbol-thionin.

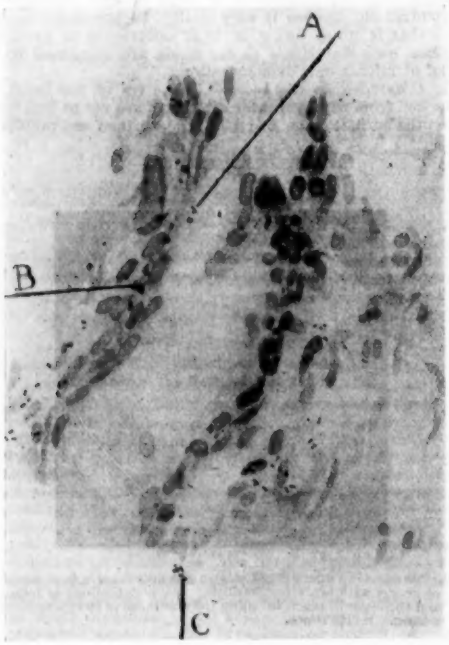
FIG. 7.

Section showing micro-organisms in the mitral valve from a case of chorea with acute endocarditis. The endothelium is intact and the organisms are invading the substance of the valve from within. × 2100 times.

found in the rheumatic nodule. This series of changes in these tissues is a strong support of the views expressed by Dr. Poynton and Dr. Still in the Transactions of the Pathological Society of London for 1899 upon the Structure of the Rheumatic Nodule.

3. *Occurrence in the kidney.*—This we believe to be one of the most interesting aspects of the subject and we briefly recapitulate here the chief facts that have come to light.

FIG. 8.



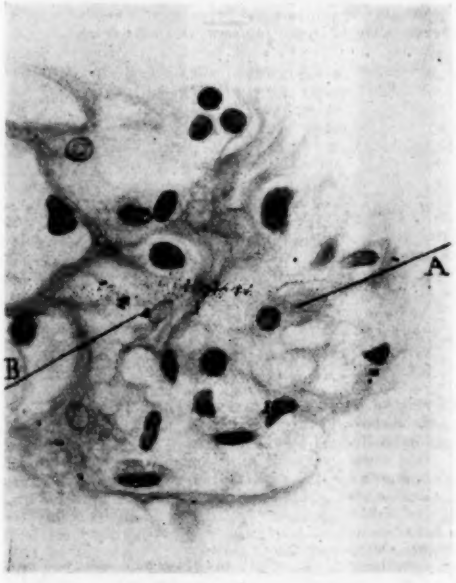
A part of the parietal pericardium of a rabbit stretched out and stained. The diplococci are distinctly seen. A, In the blood-vessel. B, In the wall of the vessel. C, In the pericardial tissues external to the vessel. They are arranged mostly in the small clumps which are so frequently seen both in the human and other animal tissues. Stain, carbol-thionin. The rabbit died from pericarditis and valvulitis.

In the first place, there is the definite proof of their occurrence in the kidneys of rabbits after death. They are found especially in the convoluted tubules lying in the cells and produce coagulation necrosis of the protoplasm. Secondly, their presence is associated with a urine which is acid, contains granular casts, and is loaded with urates. Thirdly, they have been isolated and cultivated from the urine in the bladder of rabbits. Since we ascertained these facts we have had no opportunity of following up the investigation in the human kidney.[3] The indications, however, seem clear. It is highly probable that the kidney takes an important part in the preservation of the organism against the results of this infection. The character of the urine in rheumatic fever, the occasional occurrence of nephritis, possibly, too, the occurrence of infarcts, together with the researches of Chvostek and Singer, all point to an investigation on these lines as likely to produce some valuable facts. Have the relapses that occur so frequently any dependence upon the condition of the kidney? Does the occasional association of gout and rheumatic fever bear any relation to the occurrence of renal lesions? These, among others, are the problems that suggest themselves to us. Finally, the acute nephritis which sometimes occurs in childhood without any apparent cause may possibly find its solution as being in some instances, the result of this infection.

4. *Occurrence in the liver.*—In the rabbit we have found in the liver areas of coagulation necrosis. The liver cells undergo a rapid destruction and the micro-organisms can be demonstrated within them. In this organ they do not stain well and our examination of these sections leads us to suppose that they are destroyed by the agency of the liver cells. As yet we have not found in the liver of the rabbit that extreme vascular engorgement seen in rheumatic fever, but the hepatic venules are more dilated than usual. In one severe case of rheumatic fever (Case 6) we found the condition of the liver cells resembled closely that found in the rabbit, and we believe that in this case also the diplococci, whose presence we had proved by isolating them from the pericardial fluid, were being destroyed in this organ. The small size of the micro-organisms and the fact that they stained with difficulty does not, however, permit as yet a dogmatic statement upon these points.

5. *Occurrence in the joints.*—We have no personal knowledge of their occurrence in the joints in the human being, but Triboulet discovered a diplococcus in the joint exudation. They occur, sometimes in vast numbers, in the exudation in the rabbit. The fluid in the joints of rabbits may be clear or opaque and may even have the consistence of pericardial lymph. This thick fluid is found in the joints that have been affected for some time and such joints remain distended with this fluid. Possibly this may be thought to be an important difference between the condition produced artificially in rabbits and the rheumatic fever of man. In no single case, however, have we found suppuration in any of the viscera associated with this condition of the joints; further, the exudation is definitely fibrino-cellular in character. We lay especial stress upon this point, for we are sure that to jump to the conclusion that this condition found in the rabbit was a suppurative one simply from the macroscopic appearance of the exudation would be an error. The disease must be studied both clinically and pathologically and the affected organs examined microscopically before pronouncing upon the nature of the infection. The bursæ and tendon sheaths are affected in the neighbourhood of the

FIG. 9.



A section of a rheumatic nodule, showing diplococci in the tissue. The patient (Case No. 7), a boy, aged nine years, was admitted for rheumatic pericarditis and arthritis. The course of the disease was characteristic of rheumatic fever in childhood, and death occurred after a prolonged illness. Towards the end active rheumatism reappeared and nodules developed. The section has not passed through the centre of the nodule, but through the connective tissue zone of the formation. The figure shows retiform connective tissue with small clumps of diplococci scattered through it. A, Areolar tissue. B, Diplococci. Fixative, perchloride of mercury.

[3] Ibid.

joints in rabbits as in man. As further evidence upon the question of suppuration the following experiment is of value. A rabbit was inoculated under the skin of the abdomen with the contents of six blood agar tubes of a virulent culture. A large firm swelling resulted, a gigantic nodule, which increased in size for some days and then gradually subsided without any indication of abscess formation. There were no symptoms of a constitutional affection and except for this slightly tender swelling no clinical symptoms followed. Apert, in a similar experiment with the diplococcus, isolated by Triboulet and himself, produced a like result.

6. *Occurrence in the lungs and pleuræ.*—In the lungs and pleuræ of one of the rabbits that had been killed when suffering from pericarditis, valvulitis, pleurisy, and pneumonia we demonstrated diplococci which we believe to be identical with those found in the other viscera. They were present in masses and in vast numbers beneath the visceral pleura and in the alveoli of the lungs. The alveoli were filled with an exudation resembling very closely that seen in lobar pneumonia, though the exudation had a less reticular arrangement. In a case of rheumatic morbus cordis complicated with pneumonia we have also demonstrated diplococci in the alveoli of the lungs in great numbers. More than this we are not prepared to state, for the organisms were not isolated in this case, and it cannot, therefore, be asserted that they were identical with those which we have found in rheumatic fever. When it is called to mind how frequently both pleurisy and pneumonia occur in rheumatism this demonstration of numerous diplococci in the lungs and pleuræ of the rabbit is suggestive.[4]

7. *Occurrence in the throat.*—This, again, is of considerable interest and some of the facts that have come to light have a close bearing upon the treatment of the disease. We briefly recapitulate here the most important of the results. In the first place we have in one case (Case 7) found after death both tonsils large and inflamed and this when the illness had been one of long duration. Before death there had been an exacerbation of rheumatism and this development of tonsillitis is known to occur not only at the commencement but also during the course of a prolonged rheumatic attack. In a film from the deeper part of these tonsils we found diplococci and they were also present in the sections that were made of the tonsils. Secondly, in none of the rabbits, all of which were injected intravenously, was there any inflammation of the tonsils. Lastly, we isolated diplococci from the throat of an adult the subject of rheumatic fever who was suffering from an acute faucial catarrh. These micro-organisms rapidly produced death in a rabbit. After death valvulitis, pericarditis, and cardiac dilatation were found and the organisms once more isolated. It has been already stated that many observers have insisted upon the throat as an important site of infection in rheumatic fever, and these facts strongly support this view. Further, they point to a very watchful regard for the throat in rheumatic patients and to the assiduous treatment of it, not only in the acute stage at the commencement of the illness, but also throughout the period during which active manifestations of rheumatism, other than angina faucium, are present.

8. *Occurrence in the brain and its membranes.*—Our facts with regard to this are scanty, but, coupled with the observations of Dana, Apert, Westphal, Wassermann, and Malkoff, seem worthy of record. In one rabbit after the subsidence of arthritis a paresis of the hind limbs ensued which lasted for three weeks. This was one of our earlier cases and at the time we hardly grasped the significance of the symptom. From another rabbit which died from severe valvulitis we isolated the diplococcus in pure culture from the fluid in the lateral ventricles. In a case of chorea that died in St. Mary's Hospital in 1898 in which the movements were very severe and the heart but little affected we demonstrated numerous diplococci in the perivascular lymph spaces of the pia mater, in its capillaries, and also in some parts of the motor area of the brain. In a case of chorea of similar type we demonstrated them in large number in the mitral valve. In neither case, however, were these micro-organisms isolated. Diplococci have also been discovered in chorea by Dana, Apert, and Wassermann, and in Westphal's case, examined by Wassermann, polyarthritis was produced in rabbits. It is probable, then, that there is a close association between rheumatic chorea and the occurrence of diplococci in the brain and its membranes. It is also probable that the frequency of the occurrence of chorea in childhood depends upon the more extensive dissemination of these micro-organisms in the young, as pointed to by the clinical manifestations of the disease at this age.

[4] Ibid.

VI.—The Relation of Infective to Rheumatic Endocarditis.

It is clear that the term "infective endocarditis," which has for some time been under suspicion, can now no longer be used in contradistinction to "rheumatic endocarditis," for both are plainly infective. The relation of this type of heart disease to that found in rheumatism has, we believe, been made much clearer by this investigation. That "malignant endocarditis," as we prefer to name it, is due to various causes is beyond doubt, but the frequent association of this type with rheumatism has hardly, we think, received a sufficiently minute investigation. It is indeed thoroughly recognised, but the explanation of its occurrence as due to a mixed infection has possibly been too willingly accepted.

There are cases which have the history and many of the symptoms of rheumatic fever but differ in the progressive nature of the valvulitis and in the occurrence of marked pyrexia, frequent infarction, and nephritis. With such there may be no suppuration. These cases suggest that under certain circumstances rheumatism may depart from its usual type and yet the infection be still rheumatic—a view which is also maintained by Professor Litten of Berlin.

We can offer no complete explanation of this alteration in the type of the disease, but think that a clue may be found in the distribution and behaviour of the diplococci in the cardiac valves. In simple rheumatism they are not found at first upon the surface of the valve, and the disease tending, as it does, to recovery, they are destroyed by phagocytosis, and possibly in other ways, the valve itself undergoing sclerosis. In the malignant type they reach the free surface and then appear to multiply with great rapidity, for they are found in large masses. If then they are detached by the force of the blood-stream they may possibly give rise to a condition of rheumatic septicæmia recognised clinically as malignant endocarditis. Why they should overstep the barrier of the endocardium in this way we do not know, but it is suggestive that the valves have usually been already injured by a previous rheumatic attack and that the patient is usually in feeble health at the time of the final infection.

Finally, we must say that throughout this investigation we have on all sides received the greatest help. To Mr. H. G. Plimmer we are indebted for assistance, criticism, and advice, and we can only express our obligation by claiming to be his pupils. The physicians at St. Mary's Hospital and the Hospital for Sick Children, Great Ormond-street, have placed their clinical cases at our disposal, and to Dr. H. Thursfield, the registrar at the Children's Hospital, we are indebted for leave to make use of any necropsies that might be of service. To Mr. Forbes Tulloch, a student of St. Mary's Hospital, we are indebted for the photo-micrographs. This generous help has greatly lightened the labour of this investigation and has been an additional incentive to pursue the subject.

THE DETERMINATION OF CHLOROFORM.

A METHOD OF DETERMINING WITH PRECISION MINUTE QUANTITIES OF CHLOROFORM IN THE BLOOD, SECRETIONS, OR ORGANS OF ANIMALS VARIOUSLY ANÆSTHETISED WITH CHLOROFORM.

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THE determination with rapidity and precision of minute quantities of chloroform is a problem which has hitherto not been accomplished, or only accomplished by processes so elaborate as to be impracticable. Two courses have been taken. In one set of methods the CH group has been measured by oxidimetry, much as diabetic sugar has been measured by means of the alkaline tartrate of copper devised by Fehling. In the other the Cl_3 has been measured after various prolonged and troublesome devices for breaking

up the $CHCl_3$ and reducing the chlorine to the saline form, so as to make it amenable to measurement by means of routine methods.

In view of the facts (1) that chloroform ($CHCl_3$) consists of chlorine to the extent of 89 per cent.; (2) that chlorine in the saline form is measurable with an ease and exactitude which rank its determination among the most charming and precise of chemical processes; (3) that the determination of chlorine is free from any sort of fallacy; (4) that the CH form only 11 per cent. of the $CHCl_3$; and (5) that their measurement by oxidation is full of fallacies—it would seem obvious that the true objective at which to aim was the measurement of $CHCl_3$ by means of its chlorine. Yet so difficult have been the methods hitherto in use for the reduction of its chlorine to the saline form that this natural objective has been to a great extent set aside. My object is to describe a method by which the chlorine is promptly and easily reducible to the saline form and made to serve as the measure of its chloroform. The weight of the chlorine being accurately determined, multiplication by the factor 1·12314 gives the weight of the chloroform.

If a solution of permanganic acid and potash in excess be made with 3·137 grammes of the potassium permanganate, 55·71 grammes of potassium hydrate, and water to one litre at 60° F. we get a solution in which nascent oxygen readily oxidises carbon and hydrogen into carbon dioxide and water, while potash potently abstracts and fixes chlorine as KCl. If to this solution we add less than half the permanganate equivalent of chloroform, disruption takes place in the course of a few days at the ordinary temperature of a warm room, and, on heating to 100° C., almost immediately. All that remains, practically, is to introduce the chloroform without loss, and so to secure the flask containing the mixture that it can be exposed in a water-bath which is slowly raised to the boiling-point without any volatilisation of chloroform pending its chemical disruption. The disruption of the $CHCl_3$ having been completed in the presence of the hot solution of potash, its Cl_3 is so perfectly fixed as KCl that it is thenceforth absolutely amenable to the everyday measurements of the laboratory. The presence of ether or alcohol, or of other volatile substances free from haloids does not interfere.

For the purpose of controlling the experiments chloroform must be weighed out uniformly and accurately in minute quantities. In aqueous solution chloroform diluted to 1 in 1000 is fairly manageable. In order to get a saturated aqueous solution I put pure chloroform into an all-glass burette with a sediment-end projecting downwards below the glass tap. Chloroform is then poured into the burette in quantity sufficient to fill up this tube below the tap but so that no chloroform can flow out through the tap. On filling the burette up to zero with distilled water and shaking we have a solution of chloroform which can be run off by gravity through the glass tap, while surplus chloroform remains always present at the bottom of the burette. As the chloroform-water is measured off for the purpose of experiment we fill up the burette with fresh water and, from time to time, add further portions of chloroform. A properly constructed glass stopper at the top converts the burette into a well-stoppered bottle in which, on turning the stopper round 90° one way or other, we have a burette which discharges freely, or is a perfect vessel for the storage of our solution of chloroform.

If a good balance, such as will weigh easily to 0·0001 gramme, be available, it is best to weigh out pure chloroform for the control experiments. I use a miniature test-tube having a capacity of about one cubic centimetre and a length of some two inches, standing in a 60-minim measure in the scale pan. The tube and its stand having been carefully cleansed, dried, and weighed, weights amounting to a further 0·1186 gramme are added to the other scale pan. Then by means of a very delicate pipette I drop the pure chloroform into the tube until it somewhat overbalances the weights. By means of filaments of fine filtering paper held in a pair of forceps the surplus chloroform may now be easily absorbed and the exact weight secured. Then by means of the forceps the tube with its contents is lifted out of its stand and dropped bodily into the solution and the bottle is promptly closed. If reliable apparatus be not available for preventing loss of chloroform by volatilisation under the high tension of chloroform vapour at 100° C., it is best to use strong glass bulbs of 100 cubic centimetres capacity and with long tubular necks that, under the blow-pipe flame, may easily be drawn out and sealed hermetically. I have used six-ounce strong Jena bottles, with a flat, wide, ground-down nose and a small aperture. Upon the flat nose there fits a slab of strong glass ground finely to a true flat surface on one side so as, by mere apposition, to make the nose steam-tight if properly held in place. A little flour-and-water luting on the end of the nose perfects the joint and the glass slab is retained solidly *in situ* by a brass frame and a screw-down plate. A hook upon the brass frame allows the bottle to be swung in a water-bath and beneath the gas is lighted so as to raise very slowly the surrounding water to the boiling point. With reasonably good manipulation the installation is free from any sort of risk or uncertainty, and the operation when set going may be left to itself.

In an hour or two the purple colour of the permanganate is seen to have been replaced by the bluish-green colour of the manganate, while the solution is made turbid by a large quantity of out-thrown hydrated dioxide of manganese. The gas is turned out and everything is left till cold. The flask is then unshipped and opened. If the solution be now filtered a brilliant blue-green liquid passes through. But filtration is not necessary. Decinormal solution of sodium sulphide is now dropped cautiously into the solution and the bottle is agitated enough to mix the sulphide uniformly. Decolouration takes place until the blue-green manganate is largely replaced by a colourless liquid in which float brown flocculi of manganese dioxide. Reduction having been effected the solution is poured on a filter, the bottle is washed carefully into the filter, and the filter is finally rinsed through with boiling distilled water. The filtrate is acidified with normal sulphuric acid and then, if any haze of surplus sulphur comes out, the solution is run through a second filter of fine close texture until bright. This second filter is washed through with boiling distilled water and the filtrate is finally made up to 200 cubic centimetres at 60° F. The whole of the chlorine will be found in this filtrate unless the reduction has been mismanaged. 20 cubic centimetres are enough to titrate.

If sulphur comes out on acidifying, the solution has been over-sulphurised and must be treated with fresh permanganate until an enduring rose colour comes. On running this rose-coloured solution once or twice through a fresh filter the last traces of permanganate are reduced by the action of the paper filter and a bright colourless filtrate comes through. But it is better to work the sodium sulphide as a reducer rather than as a sulphuriser of the excess of permanganate and to drop it in so cautiously that the solution yields a filtrate in which residual manganate leaves a distinct blue-green colour. Upon acidifying and running this once or twice through a fresh filter the residual manganate is reduced and a bright colourless filtrate is obtained. This is washed up to 200 cubic centimetres. 20 cubic centimetres are taken for titration.

The 0·1186 gramme $CHCl_3$ taken is an equivalent of chloroform in milligramme atoms. Under the conditions and manipulation described it is easy to weigh out the chloroform to 0·0001 gramme. The charge into which the weighed chloroform is dropped is 50 cubic centmetres of the solution. This solution, as to releasable oxygen, is decinormal; as to potash it is of full normal strength. In oxidising the carbon to carbonic acid and the hydrogen to water one atom of nascent oxygen is obtained by reduction of the permanganate in alkaline solution, and there is also used up the oxygen displaced by the three atoms of chlorine which unite with potassium. The chemical reactions may be represented as follows:—

$$CHCl_3 + 5\,KHO + O = K_2CO_3 + 3\,KCl + 3\,H_2O.$$

The disruption is effected by the double action of the nascent oxygen upon the carbon and hydrogen, while the newly-formed carbonic acid and the released chlorine are greedily absorbed by the potash. It will be noticed that only a small part of the charge is used in breaking up the chloroform. The remainder of the charge is introduced in order to raise the chemical potential and thus secure the complete disruption of the chloroform.

The determination of the chlorine is a routine matter of laboratory work. I much prefer, however, the beautiful process of Volhard to any other. The method of applying Volhard's process for urines, serums, and other such matters in which a quick and accurate method of determining chlorines is desired has been already described by me.[1] But this solution containing the chloroform-chlorine presents

[1] Sutton's Volumetric Analysis, 1896, pp. 379-380.

none of the difficulties which are presented by urines and serums. Therefore any of the processes for determining chlorine may be used.

In applying this process to the determination of traces of chloroform in the blood, urine, organs, &c., of animals variously anæsthetised with chloroform, it is obvious that the saline chlorine in blood, urine, &c., must be kept back. Chloroform is so volatile that this presents no sort of difficulty. Such matters put into a properly fitted distilling flask immersed in water that can be raised to 100° C., and furnished with a good condenser, will yield all their chloroform by slow volatilisation in the course of a few hours, and the distillation may be left to itself. Provision must be made for conveying the condensed liquid into the cold permanganate and potash solution without loss. The separation having been completed the receiving bottle must be unshipped, securely closed, and heated in the water-bath slowly up to 100° C., at which temperature it may be left for a time.

Blank determinations must be made with the identical reagents and apparatus in order to be sure that these minute quantities of chlorine are not mixed up with chlorine pre-existing in the reagents. Any such chlorine must, of course, be deducted from the determinations, or reagents must be used which are so pure as to exclude all traces of extraneous chlorine.

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ON THE CALORIE-VALUES OF CERTAIN ARTIFICIAL INFANT'S FOODS.

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I.—THE COMPOSITION OF HUMAN MILK, COW'S MILK, GOAT'S MILK, AND ASS'S MILK.

IN the present paper only those foods are considered which are suitable for the first six months of infantile life. It is obvious that such foods should approximate as nearly as possible to the natural infant's food. The first point of importance, therefore, is to determine the average composition of human milk.

From the period when lactation becomes well established (about three weeks) until the period of weaning (seven months) the composition of human milk under normal conditions remains fairly uniform. According to Biedert[1] it contains 1 per cent. of proteid, 3·2 per cent. of fat, and 6·8 per cent. of lactose. One of the most important rules in artificial feeding, therefore, should be the maintenance, as far as possible, of a uniform composition of the food throughout the first six months or at least after the third week until the end of the above period. The quality, in other words, should be preserved and the quantity increased according to the age and needs of the infant.

By the term "calorie" is understood the amount of heat required to raise the temperature of one kilogramme of water one degree centigrade. One gramme of fat in its combustion generates 9·3 calories; one gramme of sugar and one gramme of proteid (counting urea as the end-product) each liberates 4·1 calories. By an easy calculation it follows that 100 grammes of human milk of average composition correspond to 61 calories. In the case of *poor* human milk, that of starvation, the fat may diminish to 2 per cent. and the sugar to 4 per cent., but the proteid may increase to 2·5 per cent. 100 grammes of such milk represent only 36 calories, whereas in over-rich milk, as in mothers who live luxuriously and take little or no exercise, the fat may reach 5 per cent., the sugar 7·5 per cent., and the proteid 3·5 per cent. Milk of this description is very indigestible, and 100 grammes represent 90 calories.

When we compare the composition of average cow's milk the fat is about the same percentage (3·88), the lactose is diminished to 4·5 per cent., whilst the proteid reaches 3·3 per cent. The proportion of caseinogen to lacto-albumin is as two to one, whereas in human milk it is as one to two. 100 grammes of cow's milk are equivalent to 68 calories. Goat's milk, which contains 4 per cent. of proteid, 4·8 per cent. of fat, and 5 per cent of lactose, has a calorie-value of 80. Ass's milk, which contains less proteid (about 2 per cent.), is more suited for very delicate infants. Its percentage of fat reaches only 1·6 and lactose 6. The calorie-value is nearly 50. The disadvantage lies in the deficiency of fat. Assuming the composition of average cream[2] to be, fat 12 per cent., lactose 2·8 per cent., and proteid 4 per cent., one teaspoonful (four grammes) is equivalent to five calories. Two teaspoonfuls of cream added to each 100 grammes (three and a half ounces) would raise the caloric-value of ass's milk to 59.

[1] Die Kinderernährung im Säuglingsalter, edition iii., p. 83.

II.—THE MINIMAL REQUIREMENTS IN HAND FEEDING.

The following table is modified from Biedert.[3] It is evident from its results that the calorie-value should not fall below 40 per 100 cubic centimetres of liquid nourishment.

Lunar month.	Proteid.	Fat.	Sugar.	Volume per kilogramme.	Calorie per kilogramme.	Total calories.	Average weight in kilogrammes.	Calorie-value per 100 grammes of food.	Proportion of N. to Non-N.
	Grms.	Grms.	Grms.	c.c.					
First month.	2·3	4·5	6·6	140	74	278	3·770	50	1 to 5
Second ,,	3·1	3·6	8·0	227	75	246	3·285	33	1 to 3·7
Third ,,	2·8	3·3	9·9	250	79	286	3·630	33	1 to 4·7
Fourth ,,	4·2	4·8	11·8	248	104	442	4·25	44	1 to 4
Seventh ,,	3·0	5·3	7·7	266	89	570	6·4	33	1 to 4·3

As the child grows the quantity must be increased *pari passu* with its age and with its weight. For the sake of reference the accompanying table, which indicates the amounts necessary for an average infant at different ages in the 24 hours, is inserted:—

Age.	No. of bottles.	Quantity in each bottle.		Total amount.		Approximate number of calories required per day.
		Grammes.	Ounces.	Grammes.	Ounces.	
First week.	10	30	1	300	10	180
First month.	9	45	1½	400	13½	240
Second ,,	8	85	3	680	24	400
Fourth ,,	7	120	4	840	28	500
Sixth ,,	6	170	6	1000	36	600

III.—RESULTS OF OVERFEEDING.

The quantitative estimation of the income and excretion of nitrogen shows, as, indeed, one would expect, that in hand-fed children the deficit of nitrogen, in spite of the greatest care, is greater than in infants brought up on the breast. In other words, the breast-fed infant deposits a larger proportion of its nitrogen within the tissues and the muscles. Hand-fed children consequently require more nourishment, inasmuch as their food is not so perfectly assimilated. In overfed children, however, brought up by hand as much as 90 per cent. of the nitrogen may pass out in the excreta. This excess leads to a heavy and useless expenditure of energy on the part of the stomach, intestines, and kidneys. The child suffers from colic, flatulence, with diarrhœa at times (the stools containing undigested curd), and becomes exceedingly restless and fretful. Biedert has demonstrated that the stomach of a breast-fed child is usually empty about one and a half hours after a meal, whereas in the hand-fed this is not always the case even after two and a half hours. In children over four months old the residue will be further digested by the action of the pancreatic juice, with the gradual development of an alkaline reaction. In breast-fed infants the reaction of the stools is generally acid, in the healthy hand-fed (on cow's milk) it

[2] If good milk be allowed to stand in a cool atmosphere and in shallow vessels the cream taken after two hours contains from 10 to 15 per cent. of fat. Cream obtained by means of the centrifugal separator is much richer and may even reach 66 per cent. In purchasing cream from the dairy it is necessary to have some idea of its percentage of fat. In this paper the calorie-values have been estimated on the assumption that the cream contains 12 per cent. of fat.

[3] Op. cit., p. 94.

is alkaline. An acid reaction in the latter would indicate imperfect assimilation and future danger.

With regard to the percentage of sugar, this should not exceed 7 per cent. When an excess of sugar is ingested its absorption becomes deficient and diarrhœa may supervene with the formation of green acid stools. Such children are apt to become fat, flabby, and rickety.

When foods very rich in fat are administered the stools may become more frequent, acid, sometimes glistening and soapy-looking, at other times green. If the fat be diminished the motions become normal, but may reappear as before with increase of fat (fat-diarrhœa). In such cases the fat must be eliminated from the food for a time and skimmed milk along with one of the artificial foods, to be mentioned later, as Mellin's or Theinhardt's, should be employed.

IV.—MILK PREPARATIONS.

1. *Sterilised milk.*—Budin[4] recommended in 1893 the employment of undiluted sterilised cow's milk. If the patient does not thrive on the breast from 50 grammes to 250 grammes of sterilised milk, according to the extent of deficiency, may be given daily, and if the mother is unable to feed the child altogether from 500 grammes to 700 grammes of sterilised milk per diem. The calorie-value is naturally satisfactory, but the amount of proteid is obviously three times the amount required, whilst the lactose is less than what is necessary. Its use has not become general.

2. *Artificial human milk.*—The late Sir E. Frankland suggested a method of imitating human milk, the principle of which was to remove a part of the cream, digest the milk with rennet, filter off the casein, and add the necessary amount of milk-sugar. As the milk becomes acid during the process of curdling it is advisable to add a few grains of bicarbonate of sodium. In a modified method[5] the cream is separated from a pint of milk and the casein of one-half of the skimmed milk is coagulated by rennet and strained off. The whey is then boiled, and to it is added the cream and the remainder of the skimmed milk, and the whole is sterilised in separate bottles. Such a mixture would contain about 2 per cent. of proteid, 4·5 per cent. of fat, and 5 per cent. of sugar, and its calorie-value would be 74. Rotch[6] gives prescriptions for the manufacture of milk of any desired composition. The mixture approximating that of human milk most nearly is 72—viz., cream (10 per cent. fat), five ounces; lime water, one ounce; water, 14 ounces; and milk-sugar, two and a half measures (each measure holds three and three-eighths drachms or 13·5 grammes). The percentage composition of this mixture is proteid, 1; fat, 2·5; and sugar, 6. The calorie-value is 52. Some of Rotch's mixtures can only be employed temporarily and as stop-gaps, useful in feeding premature children or infants suffering from chronic gastro-enteritis, infantile atrophy, and the like. For instance, prescription 69, with 1 per cent. of fat, 5 per cent. of sugar, and 0·75 per cent. of proteid, represents 33 calories only. Biedert[7] recommends mixtures of cream, milk-sugar, and water, with the addition of milk according to the age of the child. For instance, mixture No. 2 corresponds to 49 calories and is to be employed during the second month. It is obtained by the addition of one-eighth of a litre (about four ounces) of cream (10 per cent. fat), one-sixteenth of a litre of milk, 18 grammes of milk-sugar, and three-eighths of a litre of water. Its composition is 1 per cent. of proteid, 2·6 per cent. of fat, and 5 per cent. of sugar. Ashby's[8] mixture of milk-sugar, cream, and milk contains about 1·6 per cent. of proteid, 2·6 per cent. of fat, and 5 per cent. of lactose, and corresponds to 51·5 calories. In certain cases it is advisable to replace the water by means of barley-water which contains 1 per cent. starch. This quantity, however, is very small and not harmful. The cream-conserve of Loeflund might be used in the manufacture of these cream mixtures. It contains 5 per cent. of proteid, 50 per cent. of fat, 1·8 per cent. of carbohydrate, and 20 per cent. of water. Gärtner's "fett-milch" resembles Biedert's fourth mixture. It is obtainable in England from the Friern Manor Dairy. Cow's milk is diluted with an equal quantity of sterilised water and then submitted to centrifugalisation. From the peripheral layer of milk which is rich in fat the "fett-milch" is taken and from three to four grammes of milk-sugar are added to 100 cubic centimetres. It consists of 1·8 per cent. of proteid, 3·3 per cent. of fat, and 6 per cent. of sugar. Its calorie-value is 62. Cautley,[9] by taking equal quantities of cow's milk and lactose (10 per cent. solution) and passing them through the separator with the two out-going streams equal, obtains a cream-milk of the following composition: proteid, 2·0 per cent.; fat, 3·5 per cent.; and lactose, 7·2 per cent.; and a calorie-value of 70. It was found necessary in some cases to diminish the proteid. The milk is supplied in air-tight bottles pasteurised at 160° F. and rendered faintly alkaline. The price is 6*d.* per pint. For newly-born infants or those with dyspepsia, chronic gastro-enteritis, marasmus, and with liquid green curdy stools, whey has been recommended. Ashby[10] adds two or three drachms of milk-sugar to the pint and a few grains of bicarbonate of sodium. Whey has a composition (as made according to his directions) of 2 per cent. of fat, 4·5 per cent. of lactose, and 0·8 per cent. of proteid, and its calorie-value is only 40. If 10 ounces of milk are added to two ounces of sterilised whey and half an ounce of milk-sugar the percentage become 1·75 of proteid, 2·5 of fat, and 6·0 of lactose, whilst the calorie-value becomes 55. Whey may also be used as a diluent instead of sugar or barley-water.

3. *Milk dilutions.*—If cow's milk be diluted with an equal quantity of water or barley-water the calorie-value becomes 34. Heubner and Hoffmann diluted the milk with an equal quantity of lactose of 6 per cent.[11] strength. The calorie-value then increases to 46. Other sugars, as maltose and saccharose, are not to be recommended. If barley water be used as a solvent for the milk-sugar less of the latter must be added. The composition of the mixture would be 1·6 per cent. of proteid, 5 per cent. of lactose, and nearly 2 per cent. of fat. Children with very weak digestive powers or those convalescent after acute illness might be fed with milk diluted with twice the amount of a 4·5 per cent. solution of milk-sugar. The Obstetrical Society in its "Rules for the General Management of Hand-fed Infants" (1893) recommend in the first month cow's milk, boiled and diluted with at least twice as much hot water or barley-water. This mixture represents only 23 calories per 100 cubic centimetres. Proceeding, it is said that "one teaspoonful of cream to each half-bottle of food renders the mixture more nutritious." It would increase the calorie-value to about 28. No directions are given as to the quantity of the food per diem and nothing is said of the quality of the cream.

4. *Predigested milk.*—In certain cases of infantile dyspepsia and diarrhœa Starr[12] recommends a mixture of two ounces of milk, two ounces of water, half an ounce of cream, and one teaspoonful of peptogenic milk powder (Fairchild). The last contains pancreatin, bicarbonate of sodium, and milk-sugar. The mixture is heated to 115° F. and kept at this temperature for six minutes. It has an alkaline reaction and its proteid is in a digestible form. The percentage composition is 4·5 of fat, 7·0 of lactose, 2·0 of proteid, and its calorie-value is 77. Loeflund's peptonised milk contains 5·6 per cent. of albumoses and peptones, 12·2 per cent. of fat, and 5·5 per cent. of carbohydrates (milk-sugar, maltose, and dextrin). At first it is diluted 12 times with water, and the degree of dilution is gradually lessened with increasing age of the infant to six times at the sixth month. In the more diluted forms it is poor in fat and proteid. When diluted 12 times the calorie-value is only 32. Biedert's infants' food is a condensed creamy substance which when diluted 10 times contains 0·75 per cent. of proteid, 3·6 per cent. of sugar, and 1·8 per cent. of fat, and has a calorie-value of 34·5. The proteid is not casein, but alkali albumin produced by the action of potash on egg albumen. The stronger dilutions may be given to weak infants with delicate digestive powers. In Rieth's albumose milk, albumose is prepared by heating egg albumen to 130° C. and is not coagulated by heat or acids. Milk-sugar and cream are added. It is sold in Berlin in sterilised litre flasks. The motions become fœtid, but the results are good. Two

[4] Revue Générale des Sciences, No. 21 and No. 23, 1893.
[5] Vide Fenwick: Disorders of Digestion in Infancy, p. 41.
[6] Hygiene and Medical Treatment of Children, vol. i., p. 280.
[7] Op. cit., p. 190. In Biedert's mixtures the proteid varies from 0·9 per cent. at first up to 2 per cent. at the sixth month, the fat and sugar remaining practically the same. The calorie-value in the first mixture is 47 calories and of the last 56.
[8] Fenwick, op. cit., p. 42.
[9] A Special Milk for Infants, THE LANCET, Jan. 11th, 1896, p. 91.
[10] Ashby: Edinburgh Medical Journal, April, 1899.
[11] To obtain a 6 per cent. solution the proportions are one ounce of milk-sugar to 16½ ounces of water, and for a 5 per cent. solution 20 ounces of water to the ounce of milk-sugar.
[12] Hygiene of the Nursery, fifth edition, p. 191.

mixtures are given, one corresponding to a calorie-value of 54, the other to 60. Voltmer's "mutter-milch" is a yellowish-brown substance resembling honey in appearance. After dilution with 12 times its amount of water the percentage composition is proteid 1·8, fat 2·2, and sugar 6·0, and its calorie-value is 51. The casein is partially peptonised by means of extract of pancreas. Here may be mentioned also "somatose-milk" which contains, as its name implies, a certain percentage of somatose. The latter consists of 85·7 per cent. albumose and 2·4 per cent. peptone. Five grammes are dissolved and added to a litre of cream mixture containing about 0·8 per cent. casein and 3·0 per cent. fat.

In that grave form of acute gastro-enteritis which has received the name of infantile cholera treatment often seems hopeless. There are incessant sickness, purging, and great danger of collapse. In many instances washing out of the stomach and irrigation of the colon are impracticable. A mixture of bovinine (15 per cent. soluble albumin) and brandy may be cautiously tried. One teaspoonful (or more) of bovinine is added to a wineglass[13] of recently boiled and cooled water and then one teaspoonful of the best brandy. The mixture should be surrounded by ice and one teaspoonful may be given every 10 minutes. Assuming the calorie-value of alcohol per gramme is seven and that the brandy contains 50 per cent., the heat value of the mixture becomes 17 per 100 cubic centimetres. After two days thin arrow-root, barley-water, and brandy, or peptonised milk, lime-water, and brandy, one teaspoonful of each to the wineglass, may be substituted for three or four days. Another mixture recommended in infantile atrophy and gastro-enteritis is white wine whey. The quantities are—milk 10 ounces and sherry two and a half ounces. The casein is removed. The composition of the whey would be about 0·8 per cent. of proteid, 0·2 per cent. of fat, and 4·5 per cent. of sugar. The sherry contains 12 per cent. alcohol. Ten ounces of milk equal 300 cubic centimetres, and two and a half ounces of sherry equal 75 cubic centimetres. The calorie-value of the 375 cubic centimetres is about 126, or 34 per 100 cubic centimetres. If two teaspoonfuls of cream are subsequently added to each three and a half ounces (100 cubic centimetres) the calorie-value reaches 44.

5. *Condensed milk.*—In a very large proportion of infants belonging to the poorer classes condensed milk is almost exclusively employed during the first nine months of life. It is easily diluted, it keeps well, and the child apparently thrives. Some of the best sweet brands, as the Anglo-Swiss Milkmaid Brand, contain about 8 per cent. of proteid, 50 per cent. of sugar, and 12 per cent. of fat. The directions issued by the above company are explicit enough. If we take those for the age of three months they are—two teaspoonfuls to 24 teaspoonfuls of water every two hours by day and once in three hours by night. Teaspoons, however, vary very much in size; moreover, in the case of condensed milk so much clings to the spoon in addition that no uniform composition of the mixture can be assured. The directions state that the dilutions should be at least one part in seven. The calorie-value of the pure milk is 342 per 100 grammes, and a dilution of one to seven signifies $\frac{342}{8}$, equal to 43 calories. The addition of two teaspoonfuls of cream to each three and a half ounces of fluid would raise it to 53. As is well known, children fed continuously on condensed milk, even of the best brands, become plump and fat, but they exhibit little resisting power. They succumb easily to acute gastro-enteritis and pneumonia. Moreover, there is a tendency to scurvy and rickets.

V.—Foods containing little or no Insoluble Starch.

1. *Allen and Hanburys' food No. 1.*—This is recommended for infants up to the age of four months. It contains no insoluble starch. The excess of casein from cow's milk is removed, cream, soluble albumin, and milk-sugar are added, and the mixture is sterilised, evaporated *in vacuo* to a powder, and packed in tins. It contains 13·15 per cent. of fat, 14·25 per cent. of proteid, and 65·48 per cent. of dextrin and sugar.[14] If the directions be followed—that is, if one tablespoonful of the food be dissolved in three ounces of warm sterilised water—the food contains about 2 per cent. of proteid, 2 per cent. of fat, and 10 per cent. of carbohydrate, and has a calorie-value per 100 grammes of 68. Its advantages are—(1) a uniform composition of the food during the four months, and (2) the absence of pathogenic bacteria. The disadvantage lies in the excess of carbohydrate. By taking three-fourths of the amount of food (a measure could be supplied with the food) and adding two teaspoonfuls of cream to each 100 grammes a calorie-value of 60 could be obtained and the mixture would then approximate that of human milk more nearly. In marasmus and after gastro-enteritis the amount of food could be lessened still further.

2. *Allen and Hanburys' No. 2.*—This is recommended for older children (from four to seven months old) and contains, in addition, maltose, dextrin, and soluble phosphates. The calorie-value as prepared according to the directions is 76.

3. *Horlick's malted milk.*—This is prepared by the action of malted barley (diastase) on milk, the result being evaporated to dryness *in vacuo*. The casein is no longer coagulable by acids and starch is absent. It contains about 20 per cent. proteid, 6 per cent. fat, and 64 per cent. carbohydrate. The directions given are somewhat ambiguous—e.g., under three months it is recommended to dissolve from *one to two* heaped-up teaspoonfuls in from *four to eight* tablespoonfuls of hot water. If we take the smaller proportion, and assuming that a heaped-up teaspoonful contains six grammes, the proteid becomes 2·2 per cent., the carbohydrate 6·6 per cent., the fat 0·75 per cent., and the calorie-value only 42. A tablespoonful of cream to each 100 grammes of food (three and a half ounces) would raise the calorie-value to 60 and the percentage of fat to 2·5. It is a reliable preparation, but the directions should be more definite, the amounts of food at each feeding should be noted, and a six-gramme measure supplied. In these two foods it is to be observed that no milk is added in the preparation.

4. *Mellin's food.*—This is a malted flour in which the starch has been entirely converted into soluble carbohydrate. Its composition is about 6·8 per cent. of proteid and 82 per cent. of carbohydrate. Under three months the quantities given are half a tablespoonful of food and one quarter of a pint each of water and cow's milk. The percentage composition would be 1·2 of proteid, 2·0 of fat, 5·5 of sugar, and its calorie-value 45. Above three months the proportions are—one tablespoonful of Mellin's food to four tablespoonfuls of water and six ounces of cow's milk, and the percentage becomes 4·5 of proteid, 2·5 of fat, and 7·0 of sugar. The calorie-value is 70. In the first the fat is deficient and in the second the proteid is in excess.

5. *Theinhardt's infant's food.*—This consists of milk, the proteid of which has been rendered soluble by a vegetable ferment, and of flour, a portion of which has been partially dextrinised. A further portion of the carbohydrate becomes soluble when heated. It contains 14 per cent. of proteid, about 7 per cent. of fat, and 56 per cent. of carbohydrate. Of the last 94 per cent. is soluble. For a child four months old it is recommended to use one and a half teaspoonfuls of food, five large tablespoonfuls of milk, and five large teaspoonfuls of water. Such a mixture represents 3·3 per cent. of proteid, 3·7 per cent. of fat, and 6·6 per cent. of carbohydrate. Its calorie-value is 73. Careful directions are given for each month as to quantity and quality. Biedert has found it useful in the summer diarrhœa of infants when prepared with water only, and used as a thin soup two teaspoonfuls to two ounces of water.

6. *Berger's food.*—This is a white powder consisting of flour partially dextrinised by cooking and containing pancreatic extract. If the directions for young infants are followed the mixture works out to 2·7 per cent. of proteid, 2·3 per cent. of fat, and 8·0 per cent. of carbohydrate. The food itself contains 10·0 per cent. of proteid, 1·2 per cent. of fat, and 75·0 per cent. of carbohydrate. The calorie-value is 56. With two teaspoonfuls of cream to the 100 grammes it represents 65 calories. Without the added cream there is a deficiency of fat, also there is an excess of proteid and carbohydrate.

I have not discussed other foods, such as those of Neave, Ridge, Mufller, Kufeke, Savory and Moore, and Robinson's patent barley, inasmuch as these are more suitable after the first six months are passed. But it is to be recommended: (1) that all proprietary articles, such as condensed milk, humanised milk, and infant's foods in powder, should bear on the label the average composition of the food and its calorie-value when prepared according to the general directions; (2) that, bearing in mind the ignorance of the principles of infant feeding as exhibited by the laity, each label should contain definite

[13] A wineglass is assumed to contain two and a half fluid ounces.
[14] THE LANCET, March 24th, 1894, p. 743.

rules as to the quantity of food required at each period of the infant's existence and the number of times it should be fed during the 24 hours; (3) that when feeding by these sterilised foods it is essential occasionally to add an anti-scorbutic element such as a dessertspoonful of grape or orange juice between meals three times a week, or if the child be above four months old a dessertspoonful of raw meat juice may be added to the food three times weekly (Allenbury); directions for the preparation of this juice should accompany each tin of food; and (4) that the non-liquid foods should be provided with a wooden or glass measure to prevent inaccuracy and secure some amount of uniformity in the composition of the resulting mixture.

Clacton-on-Sea.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A HALFPENNY IMPACTED IN THE ŒSOPHAGUS.

BY T. COKE SQUANCE, M.D. DURH.,
PHYSICIAN AND PATHOLOGIST TO THE SUNDERLAND INFIRMARY; CONSULTING PHYSICIAN TO THE MONKWEARMOUTH AND SOUTHWICK HOSPITAL.

A GIRL, aged six and a half years, was brought to my consulting rooms on April 10th, and her mother gave the following history. Five weeks previously the child was playing with a halfpenny when she accidentally swallowed it. She was immediately taken by her mother to a medical man who "pushed it down with an instrument." After this the child complained of pain and of difficulty in swallowing and she could only take liquids or "boily" and was occasionally seized with suffocative attacks of coughing, during which she would become black in the face. She was again taken to a medical man who declared that "there was nothing there." The child began to lose flesh and the attacks of coughing still continued, though they were rather less violent. I examined the chest with the fluoroscope and discovered the halfpenny apparently somewhat tilted and lying behind the first part of the sternum. I then took a radiograph and sent the patient into the infirmary. On the next morning she was placed under chloroform, and as the ordinary instruments were much too short I took a piece of flexible wire covered with gutta percha three feet in length, doubled it, and made a small hook at the end at an angle of about 45°, and measuring the distance from the mouth to the upper part of the sternum, which was roughly 10 inches, I notched the wire at a distance of 12 inches from the hook, and passing it down to this extent "fished" for the halfpenny, and at the second "cast" caught it. It was very firmly wedged and there was considerable difficulty in drawing it up until I could touch it with my finger, when I held it in position, seized it with the œsophageal forceps, and removed it. On the next morning the little patient ate an excellent breakfast, and as the pain and cough had disappeared she was sent home. The severe cough was evidently caused by the pressure of the edge of the coin on the trachea.

Sunderland.

*** DR. SQUANCE sent with his note a radiograph which showed very clearly the coin lying at the level of the first or second dorsal vertebra.—ED. L.

A CASE OF PRESUMED RUPTURE OF THE ANTERIOR ANNULAR LIGAMENT OF THE ANKLE-JOINT.

BY GEORGE W. ORD, M.R.C.S. ENG., L.R.C.P. LOND.

I WAS recently called to a case of so-called "sprained ankle." The patient, a muscular boy, aged 13 years, had twisted his right ankle when bowling at cricket. He did not fall down at the time but he was unable to walk. On examination half an hour later I found a slight amount of puffiness just internal to the external malleolus. There was no ecchymosis, but there was great pain on flexing the foot and on pressure over the swelling—in fact, far greater tenderness than would be expected from so slight a sprain. But for the fact that I knew the boy to be plucky and manly I might have diagnosed his apparent hyperæsthesia as a symptom of a neurotic temperament. Noticing impaired movements of the toes I made him stand up with both feet uncovered and then found the following condition. The big toe could be extended fairly well but not so well as its fellow on the sound limb; the second, third, and fourth toes could not be raised from the ground, though he was just able to communicate movement to them; while the little toe was immobile. I applied the battery to exclude the possibility of ruptured tendon and obtained muscular contraction of the extensor longus digitorum, but with diminished extension, especially of the little toe.

The injury seems to me to have been a rupture of the outer portion of the anterior annular ligament, the "giving way" of the fulcrum preventing the extensor tendons from doing their work. I can neither find nor hear of a record of a similar injury and I wonder that it does not occur more frequently. If anyone will take the trouble to put himself in the position of a right-hand fast bowler at the moment of delivering the ball he will notice the sudden jerk which the ligament in question will have to resist, the foot at the time being turned inwards. Of course, too, it follows that the faster the delivery is the greater the jerk.

The treatment in this case consisted of firm strapping and bandaging and after three weeks' rest limited extension was seen in the second, third, and fourth digits, but only slightly in the fifth. The patient then went to the seaside and on his return seven weeks after the injury (still wearing the strapping) I was pleased to find that extension of the toes was performed perfectly and was assured that he never had pain or discomfort during exercise. Running, however, had not been attempted. I told him that he must give up overhand bowling and had better practise "Jephson's lobs," an underhand yet fatal form of delivery.

The interest of the case lies, I think, in the rarity of such an injury and in the prognosis.

Richmond, S.W.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

ST. THOMAS'S HOSPITAL.

A CASE OF TYPHOID SEPTICÆMIA; NECROPSY.

(Under the care of Dr. H. G. TURNEY.)

A GIRL, aged 15 years, was admitted into St. Thomas's Hospital on Jan. 24th, 1900, and died on Feb. 2nd. The family history showed that a maternal grandmother and an uncle were treated in an asylum. The mother and the mother's two sisters suffered much from headache. There was nothing else in the history which pointed to inherited disease. The patient had had the ordinary diseases of childhood, but otherwise her health had been perfect. She was said to be of a nervous disposition. No history was obtained of exposure to infection of any sort. The catamenia were regular. There had never been any discharge from the ear. As regards the present illness, the patient complained of headache on Tuesday, Jan. 16th. This was rather troublesome on the following day, but on the Thursday evening she felt better and went to see a pantomime. On her return she complained of pain in the back and limbs and a medical man was consulted. She was then treated for anæmia and influenza. On the 20th she seemed to be worse; she slept very badly and had distressing dreams. On the 22nd she went to bed as usual, but the mother discovered in the night that she was rambling and unconscious. She had not recovered consciousness since. A friend stated that a fortnight ago the patient complained to her of pains in the

head and abdomen with occasional sweating and a feeling of faintness.

On admission the patient was a pale-faced girl in a state of complete unconsciousness. Her illness was described by the relatives as having begun with an "influenza cold" a week before with unconsciousness for the past two days. For the most part the girl lay without movement quite oblivious of her surroundings. She groaned occasionally and coughed now and then. Interference of the more active sort only, as when the mouth was forcibly opened, met with some resistance of a feeble kind. There was no stertor or puffing out of the cheeks with respiration. There was no obvious paralysis in any of the limbs; they did not fall back limply when dropped from a height, and occasionally they were moved voluntarily. The knee-jerks were present and were normal in degree. The plantar reflexes were obtained with extension of all the toes together and with dorsiflexion of the foot. There was on admission no loss of control over the sphincters. The conjunctival reflex was present and the pupils were of moderate size with retained reaction to light. The left pupil was generally a little larger than the right, though this was not always perceptible. There was no optic neuritis. The ears were normal. The lungs were normal save for the presence of numerous moist sounds which were especially audible at the bases. The respirations were 40. The cardiac apex was in the fifth space in the nipple line. Dulness commenced in the third space and was limited by the left sternal margin. No murmurs were heard. The pulse was 130, regular, and of fair volume. The tongue was very dry and was coated with brown fur. The lips and teeth were covered with sordes. The breath was very offensive. The abdomen was not distended or tender. It moved well with respiration. The spleen was not felt and the liver dulness was normal. There were no signs of fluid. A few rose-coloured papules fading on pressure were seen over the abdomen and the back. The urine was normal. The temperature on admission was 102·4° F.

On the day after admission the blood gave a doubtful Widal's reaction. With a 1 in 20 dilution there were clumping and loss of motility in 20 minutes; with a 1 in 50 dilution only a few loose irregular clumps were seen after half an hour. The urine gave a positive diazo reaction. The temperature was 104·4° in the morning and 104·2° in the evening. On the 26th the blood again gave a doubtful Widal reaction. The temperature was 104·8° in the morning and 106° in the evening. On the 27th the serum reaction was positive. With a 1 in 20 dilution there were clumping and loss of motility in five minutes and with a 1 in 50 dilution the same result occurred in a quarter of an hour. The temperature was 104·2° in the morning and 104·8° in the evening. On the 30th the Widal reaction with a 1 in 20 dilution was instantaneous. The temperature was 104° in the morning and 105·2° in the evening. On Feb. 1st the temperature was 104·8° in the morning and 108° in the evening. On Feb. 2nd it was 103·6° in the morning and 107° in the evening.

It is hardly necessary to give in detail the progress of the case for the nine days during which it was observed in hospital. The salient points were the following. As regards the state of the nervous system there was very little change from the state as described on admission. Unconsciousness persisted to the end, though during the last two days of life there were faint indications of a response to simple requests when made repeatedly. The evacuations were passed into the bed after the first day. At various times it was thought that some signs of local nerve disease had been detected—such as rigidity in one or the other upper extremity—but these signs proved to be of the most transient description and changed from day to day. There was no sign of pain, the patient lying quietly on her back. The only positive indication of enteric fever (apart from the Widal reaction) was the presence of what appeared to be typical typhoid spots on the trunk. These never amounted to more than five or six, but they were quite characteristic and developed in crops which faded in from 24 to 48 hours. None came out, however, after the third day from admission.

On Jan. 27th lumbar puncture was performed in three places between the second and third and third and fourth lumbar vertebræ, but not a drop of fluid was obtained, though there seemed to be no doubt that the needle entered the spinal theca. The bowels were kept open by means of enemata, the stools being in no way abnormal. Nasal feeding was necessary throughout the illness. Treatment was of course symptomatic and consisted mainly of antipyretic measures, tepid sponging in the earlier stage and cold water or ice packs in the later. Any good effects obtained were merely transitory. Besides this hypodermic injections of strychnia were administered and oxygen inhalations were repeated frequently during the last 24 hours of life.

Diagnosis.—In spite of the unusual features of the case the presence of the characteristic spots on the abdomen at once raised the question of typhoid fever, and this suspicion soon received confirmation from the positive result of Widal's test. The day before the patient's death still further confirmation was obtained by the admission into the hospital of a brother suffering from typical enteric fever and soon afterwards another member of the family came in with symptoms of the same disease. It was hoped that the lumbar puncture might have thrown light on the nervous symptoms which formed the dominant feature of the case clinically. It will be seen that the necropsy failed to explain why no fluid was obtained at any of the three attempts. An attempt to cultivate the bacilli from the urine also failed owing to the contamination of the specimen. The diagnosis was therefore not placed altogether above doubt till after death.

Necropsy.—The post-mortem examination was performed by Dr. C. R. Box 24 hours after death. The condition of the alimentary canal was perfectly normal from the fauces down to the rectum. Peyer's patches were not swollen or even hyperæmic, and there was no trace anywhere of ulceration. The solitary follicles were equally unaffected. The mesenteric glands were enlarged and succulent. The vermiform appendix was normal. The spleen was little above the average size, weighing less than six ounces, and was firm in texture. Under the usual precautions cultures were made from its pulp, the results of which are given in Dr. Jenner's report below. The liver and biliary passages showed no deviation from the normal. In the thoracic organs the only pathological changes visible were a marked enlargement of the bronchial glands and some collapse of the lower lobe of the right lung. The larynx was healthy and there was no sign whatever of old or recent tubercle. The nervous system showed no change. The cerebro-spinal fluid was quite limpid and normal in amount. There was the usual free communication between the cerebral and spinal divisions of the cavity, and no explanation was forthcoming as to why the repeated attempts to withdraw the fluid by puncture failed. One puncture mark was detected in the theca in the lumbar region. Various articulations were examined and found to be healthy.

Bacteriological examination.—The following is the report of Dr. Louis Jenner: "Six colonies were selected for investigation. Subcultures were made from these on to agar slopes. Subcultures were made again from these into melted gelatin. These were incubated at 22° C. Growth occurred in all, but there was no production of gas. One of the agar subcultures was selected for further investigation. Microscopically the growth showed a motile rod varying in length. This stained with the usual laboratory stains, but lost the colour by Gram's method. Subcultures were made on various media. On potato a colourless growth resulted. In sugar agar (glucose 2 per cent.) growth took place all along the line of puncture, but no gas was formed. On gelatin slopes a white transparent growth resulted resembling that of bacillus coli communis or bacillus typhosus. The colonies on gelatin were typical. On litmus agar there was a very slight production of acid followed by an alkaline reaction. In peptone water there was no formation of indol, as tested by Kitasato's method. In lactose broth there were no bubbles of gas. In cover-glass preparations stained to show them a larger number of flagella were seen on individual bacilli than ever occur on bacillus coli communis. The organism clumped readily in a dilution of 1 per cent. with serum from a known case of typhoid fever. The organism found is, therefore, bacillus typhosus."

Remarks by Dr. TURNEY.—It would be superfluous to insist upon the features, apart from the absence of intestinal lesions, which distinguish the above case from ordinary typhoid fever. But even among cases of typhoid fever without disease of the intestines it presents some features of interest. These cases, of which a fair number are now on record, may be divided into several groups. The first group includes those cases which after running a true clinical course as typhoid fever are found post mortem to lack the local lesion. In the second group, on the other hand, the

clinical course has been unusual and often absolutely unlike that of typhoid fever. The symptoms may be referable to the cerebro-spinal system in one case, to the biliary channels in another, and to the respiratory tract in yet another. Post mortem the findings correspond to the distribution of the symptoms during life; at one time they reveal a suppurative cerebro-spinal meningitis, at another an empyema, and at another a purulent infection of the bile-ducts, but in all cases alike the bacillus typhosus is found in more or less pure culture in the exudations. In the third group the symptoms during life and the findings after death correspond rather to what may be called a typhoid septicæmia—that is to say, to an intense poisoning with the organism but without any localised specific inflammation. To this last class the case just described appears to belong. The predominance of the nervous symptoms is not explained by the presence of any local infection and in all probability is due to an inherited neurotic temperament of which the family history gives strong indications. It is unfortunate that the blood was not examined for bacilli during life.

SALFORD ROYAL HOSPITAL.

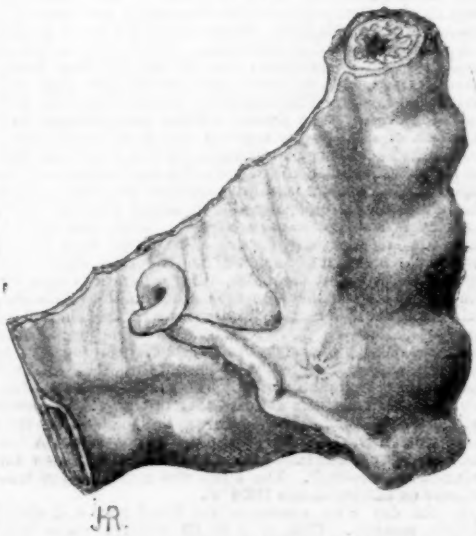
FOUR CASES OF ACUTE ILEO-CÆCAL INTUSSUSCEPTION; TREATMENT BY LAPAROTOMY WITH REDUCTION OR EXCISION.

(Under the care of Mr. J. HOWSON RAY.)

THE value of primary laparotomy in intussusception is now widely acknowledged, and the results are very fair, though in many cases some days have been allowed to elapse before the patient is brought for treatment. When the operation is performed early the percentage of recoveries is high, but it is difficult to obtain exact statistics, as in so many cases inflation and injection have been attempted previously to operating. When some days have elapsed and adhesions have formed the mortality is much higher, especially if it be found necessary to resect a portion of the bowel. Intussusception is especially dangerous in very young children, as they are prone to suffer severely from shock. In all of the four cases recorded below the patient was under nine months old, and in the two cases which ended fatally the intussusception had existed for several days, and in one of them an enterectomy had to be performed. Within the last few years many cases of laparotomy for intussusception have been recorded, but still more records are required in order to determine the best methods of operating. It has not yet been shown whether it is desirable or not to suture the mesentery after reduction; it must certainly tend to prevent any return, but it prolongs the operation, though only very slightly.

CASE 1.—A strong, well-nourished child, aged eight months, was admitted to the Salford Royal Hospital on July 4th, 1899, with a history of two days' illness, having an acute onset, and marked by vomiting, the passage of blood and mucus per anum, severe abdominal pain causing the child to scream loudly and to draw up the legs, tenesmus, and shock. The abdomen was moderately distended, but it presented a loss of normal resistance over the right iliac fossa, whilst a "tumour" could be palpated extending from the middle line above the umbilicus to the left hypochondrium and then down the left flank to the region of the sigmoid flexure. A finger introduced into the anus at once encountered the apex of the intussusception, which readily came into view when the child strained. The child's condition permitted of no delay and a median laparotomy was performed, the incision extending from the umbilicus to the pubes. Through this incision, after squeezing the intussusception from the rectum and sigmoid to the descending colon, the "tumour" was protruded into hot damp towels, and reduction was rapidly effected to the last couple of inches, where the tucked-in appendix delayed the reduction considerably. After reduction a chromicised catgut suture was passed through the meso-appendix and the left or deep face of the ileo-colic mesentery, so as to draw these together, to excite some adhesion, and to render recurrence unlikely. The position of this suture is shown in Fig. 1, which represents the deep aspect of the ileo-colic union, the appendix, the meso-appendix, and the cæcum. The knot of the suture in Fig. 1 lies under cover of the meso-appendix. The abdomen was next flushed out with warm salt solution, and the abdominal incision was rapidly sutured with one row of silkworm-gut sutures. Dry dressings and strapping having been applied, with a body bandage over all, the child was put to bed, and he rallied fairly quickly from the operation. The temperature rose to 102° F. for two days after the operation and then it fell to normal and remained so throughout. The mother fed her

FIG. 1.



The ileo-cæcal junction and appendix viewed posteriorly and showing the meso-appendix, with loop of suture uniting this to the deep face of the ileo-colic mesentery. The ends of the suture lie under cover of the meso-appendix.

child from the breast by leaning over the cot so as to place the nipple to the infant's mouth, and she repeated this procedure every two and a half hours or three hours by day, and less often by night, for three weeks, when the child was quite well and was able to leave the hospital. (He has remained in good condition since.) The sutures were removed on the tenth day. The bowels acted on the first day after the operation and regularly afterwards. The child had no food beyond the mother's milk.

CASE 2.—The patient, a child, aged seven months, was admitted to the Salford Royal Hospital on July 7th, 1899, with a history of intussusception of 12 hours' duration, marked by sudden onset, with pain, and the discharge of blood and mucus per anum. The boy was puny and a "tumour" could be made out occupying the region of the transverse colon and extending to the left hypochondrium. There was also the *signe de Dance*. Shock, though present, was not pronounced, but an injection having failed to reduce the intussusception median laparotomy was carried out below the umbilicus, and by introducing a finger and thumb it was possible to express the "tumour" from the left hypochondrium to within the right iliac region. The last part of the intussusception was brought into the wound and with some difficulty the appendix was dislodged and reduction was effected. A catgut suture was passed through the meso-appendix and the ileo-colic angle of the mesentery as in Case 1. About 18 inches from the cæcum a small double enteric intussusception was found. Here a segment of ileum, about one and a half inches long, contained short ascending and descending intussuscepta which were readily reduced. This enteric intussusception was secondary to the more serious lesion and the intestine at this point did not appear to be damaged or bruised. The abdominal incision was closed as in Case 1. Here also the mother fed the child from the breast soon after the operation and gave most of the nourishment taken in the first week. Later, as her supply was far from abundant, additional nourishment was given from the bottle with diluted cow's milk. The bowels were moved two days after the operation

and thenceforward with more or less regularity. The temperature rose after the operation to 100·2° F. and then fell, rising again on the third day to 103° owing to a superficial abscess. At the end of a week the temperature fell to normal and remained so. The sutures were removed on the tenth day and on the nineteenth day after the operation the child left the hospital soundly healed.

CASE 3.—The patient, a boy, aged seven weeks, was admitted to the hospital on Jan. 15th, 1900, with a history of acute obstruction for five days. The child was suffering from extreme shock, and the greatly distended abdomen permitted with difficulty the diagnosis of a tumour occupying part of the right iliac and lumbar regions. A little blood and mucus were passed per anum shortly after admission, but examination of the rectum revealed no other abnormality. Laparotomy was performed shortly after admission, and the greatly distended coils of small intestine prevented ready access to the intussusception. On opening the abdomen some purulent fluid, having a fæcal odour, escaped, and it was found that the ensheathing layer of the intussusception had given way on the anterior aspect on each side of the lateral band, and near the apex of the tumour (as shown in Fig. 2), setting up a diffused peritonitis. The intussusception was about four inches long and was irreducible. Resection was carried out, the small intestine was drained, and the ileum was anastomosed to the ascending colon by means of a small Murphy's button. The peritoneum having been flushed with warm salt solution and cleansed, the incision in the abdominal wall was rapidly closed by silkworm-gut sutures and the child was sent to bed. Shock was most profound and was never recovered from, death taking place nine hours after operation. An examination of the abdomen after death showed no leakage from the bowel or defect in the anastomosis and practically no free fluid in the peritoneum. The excised intussusception was found to have extensive recent adhesions between the middle and innermost layers.

FIG. 2.

Ileo-cæcal intussusception excised in Case 3. Shown from the anterior aspect. The rent in the ascending colon near the apex of the intussusception is bridged across by the lateral longitudinal band.

CASE 4.—A female infant, aged five months, was admitted to the hospital on June 15th, 1900, with a history of two and a half days' acute obstruction, the passage of blood and mucus per anum, and the presence of a tumour which was obscurely palpated in the lower umbilical and upper hypogastric regions at some distance from the surface. Examination per rectum revealed nothing but a little blood and mucus. The *signe de Dance* was well marked and there was severe peritonism. Laparotomy was performed half an hour after admission and the intussusception was found to occupy a deep position and to extend from the right pelvic brim nearly to the left hypochondrium. The small intestine having been retracted within the limits of the abdomen, the intussusception was reduced, but the last two inches gave very much trouble and required traction as well as expression to effect complete reduction. As the tucked-in appendix was extruded a depressed patch of doubtful vitality was noticed in the ascending colon, evidently due to the pressure of the appendix itself. The child's condition was bad, however, and it was decided to do nothing further except to suture the meso-appendix as in Case 1 and Case 2. The abdomen was rapidly closed as in the other cases. After the operation the temperature rose to 101° F.

TABLE GIVING PARTICULARS OF FOUR CASES OF ACUTE ILEO CÆCAL INTUSSUSCEPTION TREATED BY LAPAROTOMY WITH REDUCTION OR EXCISION.

Date of admission to hospital.	Sex and age.	Character and extent of intussusception.	Duration of symptoms before admission.	Physical signs noted on admission.	Operation.	Anæsthetic.	Feeding.	Result.
July 4th, 1899.	M., 8 months.	Ileo-cæcal intussusception reaching to the anal canal.	Two days.	Blood and mucus per anum; vomiting and tenesmus; *signe de Dance*; tumour; shock.	Laparotomy and reduction. Suturing the meso-appendix to the mesentery.	Chloroform and ether.	Entirely by mother's breast.	Bowels acted on day of operation. Recovery.
July 7th, 1899.	M., 7 months.	Ileo-cæcal intussusception reaching to the splenic flexure; also a double enteric intussusception.	12 hours.	Little blood per anum; no vomiting, and little tenesmus; *signe de Dance*; tumour; slight shock.	Laparotomy and reduction; fixation suture.	Chloroform.	Partly by mother's breast; also by bottle.	Bowels acted two days after operation. Recovery.
Jan. 15th, 1900.	M., 7 weeks.	Ileo-cæcal intussusception in right flank. Rupture of the colon. Peritonitis.	Five days.	Vomiting; blood per anum; "tumour" in the right flank, which was palpated with difficulty; extreme shock.	Laparotomy; excision of the intussusception; ileo-colic end-to-end anastomosis by Murphy's button.	Chloroform.	Diluted milk from teaspoon.	Death in nine hours.
June 15th, 1900.	F., 5 months.	Ileo-cæcal intussusception placed deeply towards the middle line and apparently three and a half inches long.	Two and a half days.	Vomiting; blood and mucus per anum; *signe de Dance*; severe peritonism.	Laparotomy and reduction; fixation suture.	Chloroform and A.C.E.	Four times from mother's breast.	Bowels acted in 14 hours. Death in 30 hours.

and the child was restless, refusing all nourishment when first offered. About four hours after the operation the child was fed from the breast and subsequently on three occasions. About 14 hours after the operation the bowels were moved fairly well, a natural motion was passed, but the child failed rapidly about 24 hours after laparotomy and died from shock six hours later. Post mortem the peritoneum appeared to be quite normal, there was no recurrence of intussusception, and some adhesions had formed between the meso-appendix and the mesentery. There can be little doubt that earlier operation should have saved this patient.

Remarks by Mr. RAY.—The surgical treatment of acute intussusception presents many features of great interest and although the results of treatment by laparotomy and reduction, where this is possible, are not always so good as might be expected, failure is usually due to the fact that operation has been postponed until the involved portion of gut has been most seriously damaged, or that the initial shock and peritonism have caused too deep an impression to be removed by any treatment. In THE LANCET of Nov. 12th, 1898 (p. 1262), I reported a case of acute ileo-cæcal intussusception where laparotomy and reduction revealed a serious lesion in the ascending colon, and where death followed from continued shock in nine hours after operation. Since reporting that case the above cases of acute intussusception have been under my care, all being of the ileo-cæcal type. In three instances laparotomy and reduction were carried out and resulted in two recoveries and one death. In the remaining case the intussusception was irreducible, and, moreover, the ascending colon forming the intussuscipiens had perforated in two places; here the entire intussusception was excised and end-to-end anastomosis was performed by the use of Murphy's button, but this case terminated fatally. The duration of intussusception was 12 hours and two days respectively in the two successful cases, whilst it was two and a half days and five days respectively in the two fatal cases. The irreducible variety occurred in a child, aged seven weeks; the remaining children were aged eight months, seven months, and five months respectively and in each of these the mother fed the child from the breast after operation. In all four cases either a more or less definite tumour or the *signe de Dance* (loss of resistance to palpation over the right iliac fossa) could be made out and in all the cases an acute onset was speedily followed by the passage of blood and mucus per anum. It will be noticed that in three cases the patients were males and in one case the patient was a female. In the accompanying table will be found the leading features of each case.

STATE HOSPITAL, JAMMU.

TWO CASES OF RENAL SURGERY.

(Under the care of Lieutenant Colonel JOSHUA DUKE, I.M.S., Resident Surgeon in Kashmir.)

THE difficulty of detection of a renal calculus is often very great and needling has in many cases utterly failed to discover the presence of a stone which has been found later. The Roentgen rays are sometimes of value, especially when the stone is composed of calcium oxalate, for a uric acid stone gives but a very faint shadow. Probably the best procedure to adopt when palpation of the kidney gives no indication of the presence of a stone is to make an incision along the convexity of the kidney, laying open the cavity of its pelvis. In this way the whole of the organ can be very thoroughly explored and the stone can almost certainly be found.

CASE 1. *Nephrolithotomy.*—A sepoy in the Imperial Service troops, Kashmir, came before Lieutenant-Colonel Duke at an annual invaliding board in December, 1898. The patient then complained of severe pain in the right hypochondriac and lumbar regions. He said that this pain rendered his life a burden to him and that he could serve no longer as a soldier. Inquiry proved that he had previously undergone an operation at Gilgit for the relief of the pain and he showed a scar in the right loin. He was therefore admitted to hospital for further examination and operative treatment. A telegram was sent to the agency surgeon at Gilgit (400 miles distant) inquiring whether the man's statement was correct and a reply was received by wire saying that an operation had been performed—the kidney had been manipulated but no stone was found. Owing to the kindness of Major Roberts, I.M.S., Lieutenant-Colonel Duke is able to give the patient's previous history and a note on the primary operation.

The patient, who was 28 years of age, was admitted to the Military Hospital, Gilgit, on Jan. 23rd, 1899. He complained of pain in the right loin. Sometimes this pain was situated in the loin and at other times over the sacro-iliac joint, radiating to the other side. The urine contained albumin. As the case progressed the amount of albumin varied from one-eighth to one-sixth, sometimes almost disappearing. There was no blood. About the middle of April he began to have pain radiating from the loin into the right groin and testicle. As there was no improvement under treatment it was decided to explore the kidney on the supposition of stone, although the amount of albumin in the urine was not in favour of this.

An operation was performed on May 8th, 1899. The usual oblique incision was made in the right loin and the peritoneal fat was exposed. This was stripped off and the anterior surface and the hilum were fully exposed to the touch of the finger. The kidney was judged to be small and no prominence could be made out on any part. The posterior surface and ureter were also explored. It was not judged necessary to try the needle. Deep catgut sutures were placed in the muscles and a drainage-tube was inserted in the wound which healed without any complication. After the operation there was an interval without pain in the loin, but this symptom returned. The patient was sent back to Kashmir and Jammu, leaving Gilgit on June 16th, 1899.

On August 24th, at Jammu, the urine was of specific gravity 1026 and contained one-quarter albumin and lithates in abundance. He was re-admitted into the State Hospital, Jammu, on Dec. 26th, 1899. There was then severe and almost constant pain in the right hypochondriac region and in the right loin. The pain was aggravated by pressure before and behind. The urine was normal in every respect.

The second operation was performed on Jan. 1st, 1900. The right loin was opened for the second time. The incision was now made parallel with, but fully half an inch posterior to, the primary scar. The renal fat was exposed and some was torn out, and the kidney was brought well into view. Careful palpation revealed nothing. Needling was then commenced and six punctures were deeply made in various positions. Nothing could be felt and Lieutenant-Colonel Duke began to despair of finding anything. At the seventh puncture, however, made from below upwards a stone was felt and then struck on audibly. A deep incision was made and a Thompson's sound was passed. This at first entered the ureter, running easily; it was then withdrawn and turned and struck the stone in the upper calyx of the kidney with a metallic noise. The opening was then enlarged, free bleeding ensuing. The finger was now passed into the hilum on to the stone. The calculus, however, was firmly adherent and its pointed apex was imbedded, so that it had to be slowly peeled off and loosened. It was then removed with forceps. The hæmorrhage was controlled by sponge-pressure and after it had ceased a drainage-tube was inserted and the wound was firmly closed. The stone, which was roughly triangular in shape, weighed on removal 36 grains. The patient did well after the operation, though a good deal of blood was passed in the urine, a symptom which continued until the ninth day. On Jan. 15th the drainage-tube, which had been frequently shortened, was taken out and the sutures were removed. There was slight sweet discharge. The urine contained mucus and lithates but no blood or pus. On Feb. 1st the wound was soundly healed and the patient was up and about.

CASE 2. *Nephrotomy.*—A Hindu male, aged 35 years, was admitted into the State Hospital, Jammu, on March 16th, 1900. Ten years ago he had an acute attack of pain in the left lumbar region which lasted for 12 hours and was relieved by taking a warm drink, prescribed by a native physician. The pain was associated with a sensation of something rough passing down from the kidney and the patient thought that his left testicle was drawn up. Three years later he passed some sand and gravel with his urine. Four years subsequently he had another attack of lumbar pain similar to the first. There was no history of hæmaturia or definite pain with drawing up of the testicle. He had never had retention of the urine. His general health had failed since these attacks. On admission there was marked tenderness on pressure over the lower border of the right kidney below the rib, the patient wincing when the thumb was pressed on.

The pain was increased when the hand was placed over the abdomen and pressure was made from behind. He complained of a sensation of something rough moving in the region of the kidney. The above were the only symptoms. The urine was of specific gravity 1029 and was healthy in every way.

An operation was performed on March 21st, 1900. The kidney was exposed in the left lumbar region by an incision four inches in length. About two inches of perirenal fat were removed and the kidney was brought into view, but not outside the loin. On drawing the lower end of the kidney into the wound a small cyst of the size of a pea was seen. This was needled and a little yellow serum was evacuated. On passing the needle in deeper some more of the same serum (almost pus) oozed up. The needle was then passed in deeply at the lower fourth and struck on what felt exactly like a stone or concretion. A cataract knife was passed down over the needle, which was withdrawn, but no stone was felt, although the needle had given the actual sensation of hitting a stone. A free incision was then made in the lower part of the organ and the finger was passed in but nothing could be felt. A sound was then inserted which, however, did not pass down the ureter owing probably to the incision being in the lower third of the organ. The finger was then thrust on the hilum. All the calyces were explored but no stone could be felt with the finger inside and careful palpation outside. Several small nodules or lumps were felt; all these were needled. They were probably small cysts of the same nature as that seen on the surface. The operation had therefore unwillingly to be abandoned, although the operator could have sworn that a stone or concretion had been originally struck on. It may be noted that while exploring with the finger inside the respiration twice stopped. The hæmorrhage in this case was very trifling. A drainage tube having been inserted, the deeper structures were drawn together by catgut sutures and the wound was firmly closed by six silk sutures. One-third of a grain of morphia was injected after the operation, as the kidney had been severely handled.

On March 22nd the patient passed a restless night. The dressings, which were soaked with bloody serum, were changed. The temperature was 102° F. The patient had a cough and there was viscid white expectoration pointing to pneumonia. On the 23rd the temperature was normal, the pain was much less, and the general condition was satisfactory. On the 24th he was doing well. On the 27th the urine was still smoky. There was a discharge from the wound with a uriniferous smell. The cough was still present, with frothy expectoration; the respiratory sounds were clear over both lungs. On April 3rd and 4th there was a rise of temperature in the evening. On the 5th the dressings were still soaked with a uriniferous discharge. The lower two-thirds of the wound had healed but there was no attempt at union in the upper third, which was a fistulous track four inches deep. The urine was now quite clear. There was an erysipelatous blush around the wound and the interscapular region. The patient was removed to a separate room, the ward in which he had been treated being rather overcrowded and occupied by some very foul cases, including famine-stricken patients with sloughing ulcers. To continue briefly, the patient was brought to death's door by this and subsequent erysipelatous attacks from which recovery was slow, and he was not discharged from the hospital until June 3rd. The wound had then completely healed, the process of union being retarded by consecutive attacks of erysipelas. There had been no recurrence of pain in the loin ever since the operation and the deep-seated tenderness over the kidney was no longer complained of.

Remarks by Lieutenant-Colonel DUKE.—Considering the enormous preponderance of cases of stone in the bladder in India and the extensive removal of calculi by litholapaxy, it is curious that stone in the kidney is comparatively rarely met with, and surgeons in India do not appear to have the opportunities of exploring the kidney that fall to their *confrères* at home. When Mr. Henry Morris, the great pioneer and exponent of kidney surgery in England, was house surgeon at Guy's Hospital I had the honour of being dresser at that institution; but during my period of studentship I cannot recall seeing a kidney cut down on, nor, unfortunately, have I ever seen this operation performed by a skilled surgeon. In Indian civil and hospital practice, however, one has to take every case that comes to hand. As bearing on this subject since my case in 1895 of nephrotomy for neuralgia of the kidney,[1] though I have performed litholapaxy many times the above two cases are the only ones that have occurred in my practice. The points of interest in Case 1 are (1) the presence of a large though transient quantity of albumin, and (2) the fact that simple manipulation failed to discover the presence of a calculus. In Case 2 the operation only revealed cystic disease of the kidney. No stone was found although the kidney was most freely handled and examined. It is just possible that a small stone was pushed on or slipped into the ureter, which was not carefully catheterised.

Reviews and Notices of Books.

Manual of Midwifery. By W. E. FOTHERGILL, M.A., M.D. Edin. Second edition. With double Coloured Plate and 76 Illustrations in the text. Edinburgh: W. F. Clay. 1900. Pp. 506. 8vo. Price 9*s.* net.

WE are glad to see by the appearance of a second edition that this very excellent little manual has met with some success. Owing to the short time that has elapsed since its first appearance very little alteration has been required to bring it up to date. The author has succeeded in doing this without materially adding to its size, the increase in the number of pages being only about 20. Amongst the additions we notice a short account of Van Tussenbroek's case of ovarian pregnancy. The section devoted to the subject of posture during labour has been largely added to and diagrams have been introduced to show the advantages derived from an adoption of Walcher's position. Dr. Fothergill arrives at the following conclusions with regard to the position of the patient: 1. For labour presenting no difficulty the left lateral posture is best. 2. If the head be arrested at the brim Walcher's posture, legs hanging down. 3. Head arrested at the outlet of the long pelvis, lithotomy posture, legs pressed against the abdomen. 4. Head arrested on the perineum, legs extended at the hips.

In a short account of the organisms most commonly met with in cases of puerperal infection too much is, perhaps, said about the bacillus coli communis. It has yet to be proved with certainty that either the staphylococcus or the bacillus coli communis can give rise to septic infection as opposed to septic intoxication. With the statement that most cases of "fever during the puerperium are not cases of puerperal septicæmia" but are due to the absorption of poisonous substances from the alimentary canal we entirely agree.

In an appendix Dr. Fothergill gives a short account of the so-called hepatic toxæmia of pregnancy. Its relation to the minor and major disorders of pregnancy and its proper treatment are fully discussed.

Several new figures have been added, including the microscopic appearances of the decidua and villi and illustrations of fleshy moles. We would like to suggest to the author that in place of Fig. 9—an inaccurate diagram of the placenta—he should insert in another edition either a new and accurate diagram or one of the very excellent drawings of the placenta to be found in Varnier's "Obstétrique Journalière." The book contains a clear and good account of the facts of midwifery and is well worth reading.

Essentials of Diagnosis. By SOLOMON SOLIS-COHEN, M.D., and AUGUSTUS A. ESHNER, M.D. Second edition, revised and enlarged. Illustrated. London: Henry Kimpton. 1900. Pp. 391.

THE first edition of this little work, published in America in 1892, constituted one of the series known as Saunders's Question-compends. Its popularity among medical students in America to-day justifies a second edition and warrants its inclusion in Kimpton's Students' Series. In its present form

[1] Vide THE LANCET, August 17th, 1895, p. 407.

it enters into competition on even terms with our own Aid Series and such students' digests as are intended to assist in the rapid preparation for medical examinations. The new edition is enlarged, revised, and brought up to date. As regards the new subject matter that which deals with those interesting and obscure diseases, or symptoms, known respectively as acromegaly and pulmonary hypertrophic osteo-arthropathy, appears most complete and suitably illustrated.

The method adopted in "Essentials of Diagnosis"—namely, that of question and answer—certainly renders its highly condensed pages lighter and more interesting reading than a mere abstract covering the same ground. It conduces, however, to a style of expression which is dogmatic and not always justifiable even in the formulation of definitions intended solely for consumption by students. For instance, the differential diagnosis between rheumatism and gout and between hæmatemesis and hæmoptysis must strike the reader as singularly inadequate and impracticable. And when the student learns from his "essentials" that measles are only liable to be confounded with typhus fever he may well ask himself whether the conditions of disease in this country and in America are sufficiently identical to justify the adoption of a common guide to diagnosis. The definition of rachitis as a disease practically confined to the perverted development of bone in growing children is hardly one which we should expect to learn from America, the Mecca of pediatrics.

The *lapsus calami* of "chordæ tendinea," an excusable error in a first edition, jars rather unpleasantly when perpetuated in a second and "thoroughly revised version." As a cram book for English students "Essentials of Diagnosis" must stand or fall by its own merits, but we would once again warn students against adopting such books in place of the recognised text-books. A "cram-book" may be employed to *test* a student's knowledge but should never be used to *acquire* that knowledge. Students, moreover, will be well advised to recognise that the nomenclature and orthography of American authors are not always in harmony with English ideas and usages.

Lehmann's Medicinische Handatlanten. Band VII.: Atlas und Grundriss der Ophthalmoscopie und Ophthalmoscopische Diagnostik. Mit 149 farbigen und 7 schwarzen Abbildungen. Von Professor Dr. O. HAAB in Zürich. Dritte stark vermehrte Auflage. (*Lehmann's Medical Hand-Atlases. Vol. VII.: Atlas and Elements of Ophthalmoscopy and Ophthalmoscopic Diagnosis.* With 156 Illustrations (149 coloured). By Professor HAAB of Zürich. Third edition, considerably enlarged). Munich: Lehmann. 1900. Price 10*s.*

THIS volume is one of 30 illustrated manuals published by M. Lehmann, written by specialists and intended to assist students in their studies. Other volumes deal with gynæcological operations, with normal and with pathological histology, with operative surgery, cutaneous diseases, bacteriology, and other branches of medicine. The chromolithographs are very fair representations of the principal forms of disease likely to be met with in practice, and this edition has been considerably enlarged, not only by the introduction of new plates of the fundus oculi in disease, but by others which display the appearances presented in microscopical sections. Thus Fig. 15 shows a section through the optic nerve and disc in a case of papillitis or stauungspapille; Fig. 21 a section through the optic nerve in a case of atrophy of the nerve; Fig. 24 a section of the normal globe close to the margin of the cornea, whilst others exhibit the structures in the vicinity of the ciliary region, as well as the appearances presented by the excavated optic nerve papilla in glaucoma; and Fig. 27 illustrates the retina in Bright's disease. The new coloured drawings of the fundus include one showing air-bubbles in the vitreous after injury, others show retinal arterial disease in syphilis, detachment of the retina at an early stage of its development, senile pigmentation of the retina, and atrophy with the formation of holes in the retina near the macula lutea. There is a short introductory essay of 82 pages on Ophthalmoscopy generally, and a brief but intelligible explanatory note giving an account of the peculiar features accompanies each drawing. The price of this useful volume is remarkably moderate considering the number of coloured plates it contains and the care with which they are drawn, and the student and general practitioner will alike find it a useful help in the diagnosis of ophthalmic disease.

Troubles Mentaux de l'Enfance. Précis de Psychiâtrie Infantile. (*Mental Troubles of Childhood.*) By Dr. MARCEL MANHEIMER. Paris: Société des Éditions Scientifiques. 1899. Crown 8vo. Pp. 188. Price 4 francs.

A SPECIAL study of these diseases on the part of general practitioners is desirable partly because the effects of disturbances, organic or functional, on the child's brain differ from those produced by similar causes on the adult organ, but mainly because in education we have a remedial agent the value of which is unknown to, or underrated by, many of those who are in charge of mentally deficient children. Though no amount of training will remove an organic lesion or altogether repair the faults of heredity, yet, as Professor Joffroy says in his introduction to Dr. Manheimer's book, a properly directed education constitutes the best prophylaxis against insanity in the case of children hereditarily disposed to it. This little book epitomises in plain language, for the benefit of teachers and practitioners, the views held by most alienists on the subject of the mental diseases of childhood. While his object is a laudable one it is doubtful if the author gets far on his way to achieve it. He succumbs too often to the besetting sin of the *précis* writer and gives us a catalogue instead of an epitome. The reader who has studied larger works and is familiar with the subject to some extent will find this volume useful as a convenient way of refreshing his memory, but we fear that it will prove somewhat too concentrated a food for the digestive powers of a beginner. The book is divided into five parts. The first discusses shortly the etiology of mental affections. Here heredity plays an all-important rôle; it is, as the author puts it, "the cause of causes." Whether one parent exercises a greater influence on the child than the other has not been determined yet, but it is certain that where both parents are mentally affected or are alcoholic the chances of the child escaping some hereditary taint are small. Part II. deals with disturbances of emotion, intelligence, and consciousness. In the third part the author touches on pure psychoses, mental degeneration, neuroses such as epilepsy, &c. The medico-legal aspect of the subject occupies Part IV. French law, we are told, does not recognise full civil responsibility till the age of 21 years is reached. Full criminal responsibility is attained at 16 years of age. Below that age the accused is presumed to be innocent, although culpability may be proved. In the case of infants who are mentally deficient the degree of responsibility appears to be estimated by the general condition of the individual. In Part V. the author leaves himself but little space for his views on treatment except as regards "suggestion." He is of opinion, rightly as we think, that recourse should be had to hypnotic suggestion but rarely and only where other methods are unsuccessful—e.g., in cases of obsession by ideas of terror or anxiety. In most other cases general treatment, with or without "simple suggestion," will be found sufficient.

The book is written very lucidly and it conveniently

summarises the more important points in our knowledge of this interesting subject.

Grundriss der Klinischen Bakteriologie. (*Outlines of Clinical Bacteriology.*) By Dr. E. LEVY and Dr. F. KLEMPERER. Second edition, improved and enlarged. Berlin: A. Hirschwald. 1898. Medium broad 8vo. Pp. 450. Price 10 marks.

THIS book is intended primarily for students and practitioners. It regards the subject of bacteriology from the point of view of clinical medicine and therefore only those bacteria which are associated with the diseases to which human beings are liable are described in the text. An appendix gives a short account of some of the bacteria commonly found in earth, air, and water and ends with a chapter on Disinfection. The authors have divided their work into four parts. The first deals with the morphology and biology of bacteria in general, with immunity and infection, and with the different methods of culture and investigation; the second with the pyogenic and inflammatory bacteria; the third with the diseases caused by specific bacteria; and the fourth with infection by hypho- and blasto-mycetes and animal organisms such as the parasite of malaria, &c.

The first part is the best in the book. The chapters on Infection and Immunity give a lucid description of a difficult subject, while the section on the preparation of culture media and staining reagents is detailed and accurate. In the rest of the book the authors are somewhat hampered by the difficulty of treating a large matter shortly, and sometimes in the effort to make things plain for the beginner they yield to the classifier's peculiar temptation and indicate as distinct boundaries which are at present ill-defined—e.g., in the matter of croupous and broncho-pneumonias. The difficulty, again, of determining in a hospital whether a case of nasal discharge or sore-throat in which the Klebs-Loeffler bacillus has been found is to be regarded as one of diphtheria or not is often much greater than the book would lead the student to suppose. We have become so accustomed nowadays to associate malaria with mosquitoes that it is curious to find a writer only two years ago saying that "the conveyance [of malaria] by insects is theoretically possible and is even assumed by certain authors, but has not been demonstrated yet."

The authors have compressed a great deal of information into a little space, and their book forms an admirable introduction to the study of clinical bacteriology.

An Introduction to Pathology and Morbid Anatomy. By T. HENRY GREEN, M.D., F.R.C.P. Lond., Physician and Special Lecturer on Clinical Medicine at Charing-cross Hospital and Senior Physician to the Hospital for Consumption and Diseases of the Chest, Brompton. Ninth edition, revised and enlarged by H. MONTAGUE MURRAY, M.D., F.R.C.P. Lond., Physician to Out-patients and Lecturer on Pathology and Morbid Anatomy at Charing-cross Hospital. With Coloured Plate and 337 Illustrations. London: Henry Renshaw. 1900. Pp. 596. Price 21*s.*

A REVIEW of a ninth edition of such a well-known text-book as that of Dr. T. Henry Green's "Introduction to Pathology and Morbid Anatomy" needs no remarks as to the general scope and nature of the work. Dr. Montague Murray, who has ably edited the new edition, informs us in the preface that nearly half of the subject matter has been re-written and that several new sections have been added. The introduction of no less than 180 new illustrations has resulted in some increase in the size of the book; most of these have been drawn by Mr. Collings from photographs. The artist, the editor, and the original author of the book may all be congratulated on the result. The details of the various illustrations are most clearly portrayed and beautifully reproduced.

In a large book of this nature it is difficult to select any particular portion for criticism. The chapter on Tumours occupies 72 pages and will be found to contain an immense amount of information. The principal theories which have been advanced as regards the etiology of morbid growths are carefully discussed, but it is admitted that nothing certain is at present known. The various hypotheses that have been propounded appear to embody at least portions of the truth; they point to subordinate causes which are at work in individual instances and which need a central principle to unite them into a coherent whole. Perhaps by the time the next edition of this work appears some of the institutions or observers who are conducting investigations on the causes of "cancer" will have issued their reports and some more definite knowledge will have been arrived at.

Another interesting chapter is that on Disturbances of the Circulation, and we would especially draw attention to the sections on Thrombosis and Embolism. The causation and characters of these pathological conditions are very well described. All the latest knowledge obtained by experimental research appears to have been incorporated. The pathology of infarction is somewhat obscure. In connexion with this subject the investigations of Mall and Welch as to red infarction are noted. These observers ligatured all the vascular communications of the intestine, with the exception of the main artery and vein, and then tied the bowel above and below so that the included portion was supplied by the main artery and the blood returned by the main vein. Under these circumstances no infarction resulted. They then gradually constricted the main artery, and found that when it was sufficiently compressed to stop the lateral pulsations in its branches—or, in other words, to reduce the pressure in them to about one-fifth of the normal—hæmorrhagic infarction appeared, thus proving that the diapedesis of the red corpuscles depends on marked slowing of the arterial current, by which all distinction between the axial and peri-axial streams is lost, combined with marked increase in the capillary and venous pressure. The red corpuscles are thus brought into contact with the capillary walls and possibly pass along with the lymph between the endothelial cells.

The pathology of the nervous system is so complex and so many advances have recently been made as regards its structure and functions that it has been almost impossible for anyone, except those constantly engaged in neurological studies, to keep pace with the original observations now so frequently recorded. Dr. Murray, therefore, was fortunate in securing Dr. F. W. Mott to write the chapter on the Pathology of the Nervous System. The morphology of the nervous system is first fully described and then the various morbid conditions are described *seriatim*. The section on Degeneration and Regeneration is well worthy of study, and the account of the effects of degeneration upon function is a triumph of minute and exact description. The illustrations in this chapter are excellent, many of them being borrowed from the Archives of Neurology of the London County Council.

Dr. Green's book will continue to take a first place amongst the text-books of pathology and Dr. Murray has brought the present edition fully up to date in every respect.

Agricultural Botany, Theoretical and Practical. By JOHN PERCIVAL, M.A. Cantab., F.L.S., Professor of Botany at the South-Eastern Agricultural College, Wye. London: Duckworth and Co. 1900. Pp. xii.-798. Price 7*s.* 6*d.*

"ALTHOUGH the book has been primarily written for the benefit of students of agriculture, the greater portion of it

is equally well adapted to meet the requirements of gardeners and all who desire to obtain an insight into the general structure and life-processes of plants." So writes Professor Percival in his preface. We should like to go a step further and say that students of pure botany would do well to read this work, for in it will be found much information which they should possess. This is the more desirable, since many students of botany are strangely ignorant of the agricultural aspects of their subject, although the fault is not wholly theirs.

The first three parts constitute what is practically an elementary text-book of botany, the morphology, anatomy, and physiology of plants being considered. One of the chief difficulties in writing this portion of the work was, we imagine, in deciding what was necessary for the readers for whom the work is primarily intended. The author has succeeded on the whole in writing sufficient; no unnecessary details are to be found. On the other hand, there are a few points which might have been included and some facts which might have been described a little more fully. For example, on p. 18 the perisperm is not mentioned in the section dealing with the food stores of the seed. Again, on p. 141 the characteristics of the endodermis of the root might have been more fully described and less diagrammatically figured; also no mention is made of the exodermis, a layer characteristic of many roots. In the portion dealing with the embryo-sac the number of antipodal cells in this structure is given as three; this is not the case invariably. Directly following is an account of fertilisation, but no mention is made of the recent and important work of Nawaschin, Guignard, and Miss Thomas on the fertilisation of the endosperm nucleus in certain Dicotyledons and Monocotyledons. These and similar unmentioned points are not, however, vital ones, and it is perhaps only a matter of opinion as to whether they should be included or not.

On page 237 is an account of intra-molecular respiration. As Professor Reynolds Green remarks in a recent work, "The term is rather an unfortunate one, for as we have seen the study of the ordinary respiratory processes has shown that the molecule of the living substance is the seat of the changes they involve, and hence that all respiration is intra-molecular." The term "anaerobic respiration" is a much better one and is to be recommended.

It is pleasurable to see Professor Percival using the terms "wind-pollinated" and "insect-pollinated," for, as he very truly remarks, there is a certain amount of looseness in describing a plant as being insect-*fertilised* when it is intended to state that the organism is *pollinated* by insects.

Parts IV.—VI. are devoted chiefly to purely agricultural botany. They enter into the consideration of the chief plants grown on a farm, describing them and their varieties, besides entering into various facts the knowledge of which is more or less essential to their successful cultivation. The common farm weeds are also described as are the methods to be used in exterminating them.

Part VI. consists of a very valuable account of farm seeds. The remaining portions of the work are occupied by an account of the fungi, considered chiefly in relation to some common diseases of plants, and the morphology, physiology, and the reproduction of the bacteria.

The arrangement of the book leaves nothing to be desired. The method of intercalating experimental work throughout the text is an excellent one. Practical work is all-essential; and the exercises and experiments given, all of which may be easily carried out, will not fail to make the student thoroughly understand the principles and facts laid down. The illustrations, of which there are 265, are, with very few exceptions, really excellent.

Sufficient has been said to show that this work is extremely good; when properly used it will give the reader a correct and valuable insight into agricultural botany. The author is to be congratulated upon its publication.

LIBRARY TABLE.

The Pocket Formulary for the Treatment of Disease in Children. By LUDWIG FREYBERGER, M.D. Vienna, M.R.C.P. Lond., Clinical Assistant, Hospital for Sick Children, Great Ormond-street; Curator of the Museum, Pathologist and Registrar, Great Northern Central Hospital. Second revised and enlarged edition. London: Rebman, Limited. 1900. Pp. 239. Price 7*s.* 6*d.*—The fact that a second edition of this little volume was called for in less than 18 months after the first publication of the book is sufficient to show that the efforts of the author have been rewarded and that there was a need for such a publication. The new British Pharmacopœia caused so many alterations in the nomenclature and composition of the various officinal preparations included in it that the "Formulary" had nearly to be re-written throughout, so that we have practically to deal with a new book. Numerous additions have been made and recipes for medicated baths have been included in the appendix. The book is conveniently arranged for purposes of reference. The drugs have been placed in alphabetical order. The text devoted to the consideration of the drugs gives successively a brief account of their properties, use, therapeutics, incompatibles, dose, correction of their taste, examples of formulæ, their antagonists and antidotes—in short, a large amount of information is given in a minimum of space. The greater number of the drugs and pharmaceutical preparations considered are included in the British Pharmacopœia. In addition will be found a considerable number of drugs which are not officinal, but which are more or less frequently employed in this country for the treatment of diseases of children. Special attention has been paid to the correction of the taste of the drugs; the minimum quantity of the flavouring agent which suffices to disguise the disagreeable taste or smell of a given drug has been fixed by experiment. At the end of the book is a therapeutic index which contains the names of the most common diseases of childhood and of the drugs which are best suited for their treatment. It also gives lists of the various classes of drugs, antipyretics, carminatives, emetics, expectorants, &c. The author has spared no pains to make his work as complete as possible and the busy practitioner will find in it most valuable aids in the treatment of his little patients. To those whose practice involves the care of a large number of children we can cordially recommend Dr. Freyberger's "Formulary."

JOURNALS.

Birmingham Medical Review.—One of the original articles in the September number is a description by Dr. W. A. Potts of a case of Extreme Anasarca Complicating Pregnancy and Labour. The patient was a primipara, 32 years of age. In the ninth month of pregnancy she was "able to get about, but only with great difficulty; she suffered severe pain in the legs and thighs, which were so swollen while the skin was so coarse and dry that they suggested to the touch the trunks of trees." Labour commenced spontaneously and after it had continued for four days twins were extracted under chloroform by drawing down the feet; they were both in a condition of white asphyxia, but were resuscitated. Three days later the œdema was almost gone; the woman, however, kept her bed for a little more than a month.

Dublin Journal of Medical Science.—The original articles in the September number are as follows: Maternal Mortality in Childbed, by Dr. W. J. Smyly; the Teaching of Materia

Medica, by Dr. W. G. Smith; Portrush from a Medical Point of View, by Dr. J. C. Martin; and the Accentuation of the Second Sound in the Pulmonary Area, by Dr. J. F. O'Carroll.

Mercy and Truth.—In the September number Mr. Arthur Neve writes on Surgery (chiefly eye operations) at Mission Stations in the Punjab and Mr. Arthur E. Clayton describes his hospital and dispensary work at Onitsha in West Africa.

Gazette Médicale d'Orient.—This fortnightly periodical, published in French, is the journal of the Imperial Medical Society of Constantinople. The number dated Sept. 1st possesses features of exceptional interest, its 60 pages being devoted to an address delivered by Dr. B. Ritzo at an extraordinary meeting of the society held on August 31st. The occasion was the twenty-fifth anniversary of the accession of the present Sultan, and Dr. Ritzo, who is a member of the editorial staff of the *Gazette*, took for his theme the medical and hygienic work accomplished under that ruler (L'Œuvre Médicale et Hygiénique de S.M.I. le Sultan Abd-ul-Hamid Khan II., 1876–1900). The address, which must have occupied more than two hours in delivery, is full of information compactly arranged, and, representing as it does a pleasing chapter in the modern history of Turkey, it deserves to be known to writers on the affairs of that country and to those who are interested in the spread of medical education and in questions affecting hospitals. Dr. Ritzo pays a loyal tribute to the work of the Imperial Medical Society, which, as he mentions, was founded in 1854 and has a monthly grant of 5000 piastres (£45 3*s.*). Among the numerous military hospitals he first directs attention to the Ambulances Militaires de Yildiz, which were commenced in 1892 and now consist of 13 pavilions—three for the staff and stores and 10 for the patients, of whom at least 200 can be accommodated. The whole of the buildings, furniture, &c., were ordered in Germany. Among the civilian hospitals most space is devoted to the Hôpital Hasséki for Women, the Hôpital Hamidié for Children, the Lunatic Asylum at Top-Tachi, the Greek, Armenian-Gregorian, and French Hospitals, and the Institute for the Care of Foundlings originated and superintended by Dr. Zavitziano. A somewhat brief reference is made to the British hospitals in Constantinople, Smyrna, Jerusalem, and Jaffa. Dr. Ritzo ascribes all medical and sanitary progress in Turkey to the direct initiative of the Sultan, and on almost every page alludes to him with an Oriental fervour of admiration which is seldom if ever met with in Western writings and may be estimated from the concluding words of the address: "J'ai donc hâte de finir, afin de laisser libre cours à l'épanchement de votre cœur, qui ne peut plus se retenir de crier: Gloire à notre Auguste Souverain le Sultan Abd-ul-Hamid Khan II., le Ghazi,

"Gloire! Gloire! Gloire!"

PAUPERISM IN BARNSTAPLE.—At the meeting of the Barnstaple Board of Guardians held on Sept. 21st the Local Government Board inspector (Mr. Preston Thomas) stated that in the Barnstaple Union the pauperism was 44 per 1000, as compared with 25 per 1000 of the population generally.

LITERARY INTELLIGENCE.—Mr. Young J. Pentland will publish the following books in the autumn:—"Text-book of Physiology by British Teachers," edited by E. A. Schäfer, Professor of Physiology in the University of Edinburgh, volume II., completing the work; "Text book of Medicine by British Teachers," edited by G. A. Gibson, M.D. Edin., physician to the Royal Infirmary and Lecturer on the Principles and Practice of Medicine at the School of Medicine, Edinburgh; "Text-book of Pharmacology and Therapeutics," edited by W. Hale White, M.D., F.R.C.P. Lond., physician and Lecturer on Medicine, Guy's Hospital; "Gynæcological Operations," by Skene Keith, F.R.C.S. Edin.; and "Diseases of the Throat, Nose and Ear," by P. McBride, M.D. Edin., physician to the Ear and Throat Department, Royal Infirmary, Edinburgh.

Analytical Records

FROM

THE LANCET LABORATORY.

AUSTRALIAN WINES.

(P. B. BURGOYNE AND CO., 5, DOWGATE-HILL, LONDON, E.C.)

WE have examined a number of wines submitted to us by the above firm and the following are the results of analysis. Harvest Burgundy (red): extractives, 3·15 per cent.; mineral matter, 0·32 per cent.; fixed acids reckoned as tartaric acid, 0·277 per cent.; volatile acidity reckoned as acetic acid, 0·14 per cent.; alcohol, by weight 12·85 per cent., by volume 15·86 per cent., equal to proof spirit 27·81 per cent. Harvest Burgundy (white): extractives, 1·66 per cent.; mineral matter, 0·17 per cent.; fixed acids reckoned as tartaric acid, 0·375 per cent.; volatile acids reckoned as acetic acid, 0·132 per cent.; alcohol, by weight 11·46 per cent., by volume 14·18 per cent., equal to proof spirit 24·85 per cent. Ophir red wine: extractives, 5·53 per cent.; mineral matter, 0·41 per cent.; fixed acids reckoned as tartaric acid, 0·30 per cent.; volatile acids reckoned as acetic acid, 0·096 per cent.; alcohol, by weight 13·69 per cent., by volume 16·89 per cent., equal to proof spirit 29·60 per cent. Tintara (red): extractives, 3·28 per cent.; mineral matter, 0·28 per cent.; fixed acids reckoned as tartaric acid, 0·345 per cent.; volatile acids calculated as acetic acid, 0·15 per cent.; alcohol, by weight 12·46 per cent., by volume 15·40 per cent., equal to proof spirit 26·99 per cent. There is not much variation in the foregoing figures, except in the case of the white Burgundy. The harvest red Burgundy, Ophir, and Tintara wines are decidedly heavy in character and for consumption better diluted with water. Apart from the high proportion of spirit these contain also a somewhat large amount of extractive matters. The wines, in fact, are somewhat crude in character; they do not possess delicacy. The amount of spirit considerably exceeds the normal amount in the corresponding French wines. It is possible that spirit is added as a necessity for keeping the wine in sound condition during transport. The amount exceeds, at any rate, the maximum contained as a normal product of fermentation in French wines. We consider the white Burgundy more promising than the rest. It is in general lighter in character, containing a small quantity of extractives and relatively a small quantity of spirit. It approaches nearer to the delicacy of French wines than do the other specimens. We do not doubt that the quality of these colonial wines will improve in time in the important respects of delicacy of flavour and lightness of alcoholic strength. At present they are too "generous" and "rough." It is claimed that the Ophir and Tintara wines being grown on ferruginous soil take up a notable quantity of iron. We do not regard the quantity of iron so taken up as at all important. Iron occurs in nearly all wines in much the same amount, which is generally a negligible quantity. There would be much more iron in the average daily diet of an individual than is contained in a pint of so-called ferruginous wine. We may add that we have purchased samples of these Australian wines in the open market with the view of ascertaining whether they show a constancy of composition. The following are the results. Harvest burgundy (red): extractives, 3·015 per cent.; mineral matter, 0·315 per cent.; fixed acids calculated as tartaric acid, 0·277 per cent.; volatile acids calculated as acetic acid, 0·15 per cent.; alcohol, by weight 13·46 per cent., by volume 16·61 per cent., equal to proof spirit 29·11 per cent. Harvest burgundy (white):

extractives, 1·89 per cent.; mineral matter, 0·20 per cent.; fixed acids calculated as tartaric acid, 0·367 per cent.; volatile acids calculated as acetic acid, 0·114 per cent.; alcohol, by weight 13·08 per cent., by volume 16·15 per cent., equal to proof spirit 28·29 per cent. Tintara: extractives, 2·97 per cent.; mineral matter, 0·305 per cent.; fixed acids calculated as tartaric acid, 0·36 per cent.; volatile acids calculated as acetic acid, 0·12 per cent.; alcohol, by weight 12·00 per cent., by volume 14·84 per cent., equal to proof spirit 26·00 per cent. It is pleasing to record that the results obtained with the wines purchased by ourselves are in accord with the wines submitted to us directly by the wine-merchants. The purchased wines still show a heavy alcoholic strength, a full amount of extractives, and possess generally the "stout" character of these brands. The Harvest burgundy (white) is again the exception in regard to extractives, though in the case of the purchased specimen the percentage of alcohol was distinctly higher. This variation in the amount of alcohol suggests that what is present was not entirely developed in the wine itself. Iron was found in the ash in all cases but the quantity was unimportant and hardly to be considered as a feature in spite of the fact of being grown on ferruginous soil.

BARNANGEN'S ANTISEPTIC VADE-MECUM.

(BARNANGEN'S TECHNICAL FACTORY, STOCKHOLM; MYRSTEDT AND CO., CAMOMILE-STREET, LONDON, E.C.)

The name of this preparation is unfortunate, implying a panacea for all complaints. And this sums up practically what is claimed for it. It is said to be suitable both externally and internally, and its application is recommended, amongst many other things, for the care and preservation of the mouth, the teeth, and the skin, for various skin complaints, and internally for indigestion and sickness. According to our analysis it is a spirituous solution containing chiefly menthol and oil of cloves.

KELPION.

(THE KELPION CO., NORGROVE-BUILDINGS, 59A, BISHOPSGATE-STREET WITHIN, LONDON, E.C.)

Kelpion is described as a stainless iodine ointment yet containing the iodine for the purpose of administration in a free state. We are able to confirm this statement, for on inunction iodine soon appears in the saliva and in the urine while the skin is not stained. Kelpion contains 5 per cent. of iodine. It is a greasy, dark-olive-coloured substance which refuses to saponify with strong soda solution. It may be concluded, therefore, that the fatty vehicle does not contain a fatty acid. On heating kelpion well above its melting point iodine is liberated. Kelpion is a marked advance upon ordinary iodine unguents and is especially suitable in painful affections of the joints and for sprains and inflammations.

KÜGLOIDS.

(CHAS. KÜGLER, PARIS; LONDON AGENCY, MR. H. H. MASON, 7, BROADWAY, NORWOOD ROAD, S.E.)

We failed to find any special novelty about these capsules, for in reality that is what "kügloids" are. They contain a pink-coloured oil smelling strongly of creasote, and very little further examination sufficed to show that the creasote is associated with quinine in the form of glycero-phosphate, and eucalyptol and benzoic acid are also constituents. In short, the kügloid contains those antiseptics which are of service in the treatment of respiratory ailments. The combination is said to be well borne and, in addition to acting locally, to possess tonic qualities referable to the glycero-phosphate of quinine.

MARVIS.

(THE PATENT FISH FOOD SYNDICATE, LIMITED, BERRY-YARDS, GREENOCK, N.B.)

Marvis is a clean yellowish-white powder with a fishy odour. It is not appreciably soluble in cold water, but in hot water it forms a mucilaginous mixture due partly to the normal gelatinous constituents of the fish from which it is prepared and partly to a small proportion of carbohydrates. Marvis, in short, consists practically of desiccated fish powder mixed with a little starch. Our analysis gave the following results: moisture, 11·77 per cent.; mineral matter, 3·06 per cent.; and organic matter, 85·17 per cent. The organic matters contained no less than 62·81 per cent. proteids besides fat. The latter amounted to 2·82 per cent. of the organic matters. With marvis, therefore, a very nutritious dish may be prepared. It makes, in particular, an excellent *purée*. The flavour is that of fresh fish without any suspicion of staleness. The mineral matters contained a slight amount of iodide, but consisted chiefly of phosphate of potassium and common salt. We found a small quantity of starch present which is probably added for the purpose of making the powder homogeneous. We regard marvis as a good fish food and an introduction of distinct importance in the daily dietary.

ASYLUM REPORTS.

County and City of Worcester Lunatic Asylum (Annual Report for 1899).—The average population of the asylum during the year was 1137 and comprised 500 males and 637 females. The admissions during the year amounted to 225 and comprised 105 males and 120 females. 15 of these—viz., 7 males and 8 females—were not first admissions. Mr. George M. P. Braine-Hartnell, the medical superintendent, states in his report that of the admissions 40 were in bad health and exhausted condition and 164 in indifferent health and reduced condition. 86 patients were discharged recovered during the year, or 7·5 per cent. of the average number resident. The deaths during the year amounted to 91 or 8·0 per cent. as calculated on the same basis. Of the deaths two were due to cardiac disease, three to epilepsy, three to chronic Bright's disease, six to colitis, 11 to pneumonia, 14 to general paralysis of the insane, 20 to senile decay, and 21 to pulmonary phthisis. Post-mortem examinations were made in 76 out of 91 deaths. A married woman on admission was in a pregnant condition and was delivered of a son. "The mother, father, and brother of the patient are or have been insane, and here is this infant with such a bad 'family history' growing up and will in all probability end by marrying." "Can anyone wonder," asks Mr. Braine-Hartnell, "at the increase of insanity when people like the above marry and are given in marriage?" One inquest was held during the year on a male patient who at the post-mortem examination was found to have had three fractured ribs. No cause could be assigned, and the jury in their verdict expressed the opinion that no blame attached to anyone on the staff. One male patient on the way to recovery was one night seized with a suicidal impulse. "He smashed the window and precipitated himself to the ground. He sustained compound comminuted fractures of both legs. The left leg has since been amputated." Two male patients were attacked with scarlet fever, one female patient with typhoid fever, and there was one case of erysipelas. Colitis was the cause of death in one male and five female patients. "Phthisis accounted for 23 per cent. of the deaths. This percentage is excessive and demands serious attention. The overcrowded state of the wards is no doubt responsible in a great measure, but not entirely, for this high mortality. ..... We require separate wards in which patients showing signs of phthisis can be isolated and treated in accordance with the latest ideas." The medical superintendent suggests that in the new asylum for the county of Worcester about to be built provision should be made for an isolation block for the housing and open-air treatment of such cases. The Lunacy Commissioners in their report refer to the overcrowding in the wards, especially on the female side, and also point out that a separate ward and day-room should be set apart for the idiot children, of whom there are 17 in the asylum and who continue to be associated with the adult insane; they express the hope that the plans of the new asylum will include separate accommodation for this class of patients. They are "glad to record that advantage is taken of the means provided by the committee for the prosecution of pathological work."

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 29, 1900.

WE are once more on the eve of a great and important election. According to an old theory the duty of medical men was to exhibit during the time of an election a masterly neutrality and to stand aloof as if in a superior atmosphere from the raging strife of parties. We have often of late years expressed our dissent from that view. It would be strange, indeed, if the descendants of the Founder of THE LANCET should feel themselves bound to absolute silence at an election time when great issues have to be decided which must deeply affect the welfare of the nation and of the profession which is responsible for the nation's health as well as for the health of those services on the efficiency of which the very existence of the Empire at critical moments, such as we have just passed through, may depend. If such silence would be unseemly in us it would equally be inconsistent in the members of the profession which we have the honour to represent. We have no intention in thus writing of whetting the edge of mere party spirit, but we do distinctly mean to give expression to the conviction that at a time like this the quiet, ordered influence of the medical profession should make itself felt on candidates of all parties. It does not seem as if either party had done much yet to gain the confidence and the respect of the profession. There have been lamentable exhibitions of weakness in both the great parties of the State in regard to the greatest questions of medical science. Lord ROSEBERY has recently declared the late Government to be the weakest Government he remembers—except in votes; and he takes as the first and crowning example of its weakness its action in what is essentially a medical question—its dealings with vaccination. We confess that we are not altogether sorry to see this reproach levelled at the Government. Not only did it introduce into the Vaccination Acts an unprecedented individual "the conscientious objector," but it deliberately refused to carry out its distinct promise that in the session following that in which the Vaccination Act, 1898, was passed it would bring forward legislation to secure revaccination. Medical experience has amply shown this to be little less necessary than primary vaccination. On revaccination, as we know, all officials dealing with small-pox, including those of Leicester, rely as the only security against taking the disease and spreading it. But Lord ROSEBERY should remember in turning to party use this extraordinary action and inaction of the Ministry that it was the pressure of his own party that led the Government into such aberration from the lines of its projected course. At any rate the medical profession will remember this and will not too hastily assume that the tendency to fail at critical moments in legislation based on high scientific grounds is confined to one party. Rather will they trace this tendency to a vice of our political system which gives undue weight to the most prejudiced and the least enlightened section of voters.

There are other failures in legislation which illustrate this vice. In a recent leading article we alluded to several of these. For instance, the Government deliberately threw away an opportunity of guarding the public from gross injury at the hands of Companies posing as medical practitioners; the clause might easily have been passed if Mr. RITCHIE had chosen to assert his strength as a Minister with a majority of 120 or 130 at his back. Moreover, other Bills for amending the lunacy laws, for improving the position of medical officers of health and sanitary inspectors, and a very uncontentious Bill for amending the Medical Acts, failed to pass for want of a little more interest on the part of the Government in non-political questions. There is also another measure in regard to which the medical profession has a right to feel some dissatisfaction with all recent Governments, and that is the Midwives Bill, which appears as a sort of hardy annual session after session. The Medical Acts must not be tampered with. Midwives should either be left severely alone and be employed on the sole responsibility of those who seek their services or they should be strictly subordinated to the medical profession, and a Bill should be brought in, as Sir WALTER FOSTER suggested, on the responsibility of the Government. It is not fair to lying-in women among the poor or to the medical profession that the subject should be dangled incessantly before Parliament with the risk that in the last hours of an expiring session a new class of semi-medical practitioners may be created and all the old "Gamps" left unmolested to prosecute their dirty and deadly business.

It goes without saying that we make no suggestion to our readers as to the party which they should support, but we venture to impress upon them the duty of using the election as a means of asserting the due influence of the profession in regard to questions having medical bearings and of great public moment. If "a wise physician skilled our wounds to heal is more than armies to the public weal," what may not be the value of the judgment of the whole profession at a time like this when the reorganisation of the medical services is contemplated, when the profession itself is pressed with new problems, and when public bodies are charged with ever-multiplying duties of a semi-medical kind? He must be an obtuse observer who does not perceive that questions of mere medical politics are little liked in Parliament and are severely evaded by Ministers. There is the more reason for medical men to assert themselves in general politics. It may be said that this will be unsafe as regards their professional prospects, that their *clientèle* will include men of various shades of political opinion, some of whom will be sure to be offended with their action. We very much doubt the risk and, if we admitted it, we cannot allow that it should be regarded by any self-respecting member of the profession. The election strife carried on in the manner satirised by LOVER, THACKERAY, and DICKENS may be left to the uneducated, but true politics—i.e., the science of what is best for the State, and the use of

knowledge, knowledge of health and illness, of disease and its prevention—are for the educated, and so long as this knowledge is used with dignity and discrimination so long will its exponents be respected by the men of all shades of political opinion. It is for men of liberal professions to use elections so as to raise the whole spirit and standard of political discussion.

A PARLIAMENTARY paper dated July 9th, 1900, has been published by the India Office containing the correspondence which has taken place between that office and the Government of India on inoculation against cholera and typhoid fever. There is no need on this occasion to touch upon the first-named part of the subject, and we may confine our attention exclusively to that part which concerns preventive inoculation against typhoid fever in India. Everybody at all acquainted with the medical history of India knows the terrible drain on the young manhood of this country caused year after year by the ravages of that disease. The matter is one which gravely concerns the health and efficiency of the British army and civil service of India, but more especially the young officers and soldiers serving in that country. The aggregate loss of life caused by enteric fever is simply deplorable, to say nothing of the serious illness it always, and of the wrecked health and invaliding which it so often, occasions. In spite of all the efforts that have been made to prevent or limit the extent of its prevalence it cannot, unhappily, be said that up to the present time they have been attended with success. Under such circumstances it is not easy to exaggerate the importance of experimentally testing the value of any prophylactic method of treatment which is based upon approved scientific principles and bacteriological investigations and which promises to be of real value. Major RONALD ROSS, I.M.S., of whose scientific investigations in connexion with malaria and the malarial parasite it would be difficult to speak too highly, has brought a serious indictment against the India Office in a letter published in the *Times* of Sept. 24th, wherein he severely criticises its action in this matter of inoculation against typhoid fever. Major RONALD ROSS, in his comments on the published correspondence on the subject of inoculation against typhoid fever, says:—

"The paper contains a statement which appears to be of the most serious nature—that the Secretary of State for India refused in 1898 to permit officers and soldiers to undergo this inoculation even voluntarily. It was not merely a refusal to give the inoculation Government assistance, but a refusal to allow it to be practised on Government servants at all, even if they wished it. This ruling was made in opposition to the advice and wish of the Government of India, and seems to be still in force—though it appears to be equally opposed to the private liberty of the soldiers, the health of the army, and the progress of science."

We confess that a cursory perusal of the printed official correspondence in question did not convey to us the impression that the Government had, under the circumstances stated, once and for all expressly prohibited the practice of inoculation against typhoid fever, otherwise we should have felt compelled to concur entirely with the view taken by Major ROSS. Neither does a subsequent reference on our part to the paper containing the official correspondence make out so bad a case against the India Office as stated. It is not quite plain to us that the Government had any intention of issuing any peremptory and prohibitive order against voluntary inoculation, and we can only conclude that there has been some misapprehension in the matter. The facts set forth in the published correspondence according to our reading are somewhat as follows:—

The Government of India in November, 1897, proposed that the services of the professor of pathology at the Army Medical School, Netley, should be lent to them for four months to carry out his system of inoculation against typhoid fever. The Secretary of State for War was unable to assent to such proposals for certain alleged reasons, which might have been right or wrong, but need not concern us now. His decision was conveyed without comment to the Indian Government in a military despatch dated March 3rd, 1898, and was communicated in the usual manner for the information of the Commander-in-Chief and Principal Medical Officer of Her Majesty's Forces in India. But as it was understood that Lord LANSDOWNE'S objection to the introduction of the treatment applied to the formal authorisation of inoculation at the public expense rather than to voluntary operations at private cost, advantage was taken, under that supposition, of the presence in India of Professor WRIGHT as a member of the Plague Commission, and the practice was carried out at certain stations though without the sanction of the Indian Government or of the Commander-in-Chief. Over 2000 soldiers were voluntarily inoculated. On the facts being known orders were issued to stop further inoculations. But in conveying this information to the India Office the authorities in India—including the Government, the Commander-in-Chief, and the Principal Medical Officer—strongly urged that Her Majesty's Government should reconsider its objection. This was apparently done, for in a letter from the Government of India to the Secretary of State for India, dated March 8th, 1900, it is stated that "since receiving your approval of the resumption of inoculation at the public expense in August last the measure has been largely resorted to, and we have hopes that the results will be satisfactory in securing some considerable degree of immunity, especially to young soldiers during their first year of service." In a despatch from the Secretary of State for India, dated May 10th, 1900, the receipt of the interesting report of the Principal Medical Officer of Her Majesty's Forces in India, with the remarks of the Indian Government on the subject, are acknowledged and returns are called for as soon as sufficient data are available.

THIS is an age of congresses. During this year especially a large number of assemblies of scientific and other bodies are being held to read papers on and discuss many matters connected with the bodily or mental welfare of mankind. It is, however, with congresses on subjects connected with the science of medicine that we are more closely interested. It is a natural question to ask whether according to the manner in which they are now conducted

the greatest good results from them or whether certain modifications might be made in their arrangements by which more material results might be obtained. We are afraid that one fact cannot be disguised, and that is that a "congress" of any kind is often an excuse for a number of men to flock together in order to take part in various social festivities and excursions under the self-deception that they are adding to the success of the meeting by swelling the number of names placed in the attendance list. A large number, no doubt, "look in" for a short time at one or more of the "sections," but it is only a minority who enter into the serious work of the congress. Not a few attend and read papers on their own particular subjects, but no discussion ensues and little good results. The "opening addresses" by the presidents of the various sections or by some eminent physician or surgeon are listened to by large audiences, are of general interest, and are frequently some of the most valuable contributions to the literature published in the shape of "proceedings" of the congress. A certain number of subjects for discussion are also chosen by the officials of each section. Recognised authorities are selected to open the debates, and several other well-known observers are invited to take part. Such discussions are generally a success and much useful information is thereby obtained. But the same cannot be said of some of the other, of those which may be termed private, contributions already alluded to. Many of these seem simply framed to air some theory or grievance of the author and much useful time is lost in listening to the reading of such dissertations.

It is difficult to suggest means by which the above defects might be remedied. The main objection to the social arrangements is that the crowding thereby caused is a source of discomfort to those who are entirely bent on the scientific aspects of the meetings which, of course, should have first place. Another objection is that the necessary amount of entertainment involved, and the expense thus incurred, cause certain communities to hesitate before sending an invitation to a congress to assemble in the town. A certain amount of hospitality, of course, is to be expected, but the extreme to which this has been carried is to be deplored. A public reception of the officials and delegates is a graceful recognition of the importance of the meeting, but to expect numerous banquets and large garden parties to be given by private individuals is to place too great a tax upon hospitality. The vast majority who will accept such invitations take but very little, if any, part in the real business of the congress, whilst the secretaries of sections and others who have given much labour to the organising and management of the discussions have no time to attend. We would suggest, therefore, that the system of inviting public bodies and societies to send delegates to represent them at congresses might be extended and that as far as may be public receptions only should be given, special invitations being sent to such delegates, and that when possible the expense of such receptions should be in a great measure defrayed by the funds at the disposal of the organising committee. Such a procedure would certainly lessen the total number of members attending a congress, but we believe that the actual scientific work accomplished would be increased rather than diminished. Another suggestion we would make is that longer notice should be given of the subjects chosen by the committees of the various sections for discussion. Papers contributed by other members on their own initiative need not be discouraged, but it should be clearly intimated to the authors that an opportunity for reading them would only be afforded if time permitted after the official discussions had concluded. A further point for consideration might be whether it would be advisable to appoint a committee to consider the contributions sent in and only to accept a certain number for publication in the proceedings. By giving longer notice, as above suggested, ample time would be given for those who intended to take part in the discussion to undertake fresh observations or corroborate those already made. At the sittings of the congress much valuable material would thus be produced and full opportunity would be afforded for analysing and criticising the work accomplished. If only a few subjects were chosen the discussions would not have to be closed prematurely as is now so frequently the case.

Congresses in the past have done good and valuable work. Lasting and deep-reaching results have been obtained from such gatherings and they have been the means by which legislation in many countries has been effected. The resolutions adopted have been forwarded to the proper authorities, with the result that action has been taken which has been of the greatest benefit to the community at large. It is, of course, open to argument as to how far the social element should be modified. There are certain international advantages to be obtained from men of science from all parts of the world meeting together in friendly concourse apart from the essential scientific purposes of the meeting; but such assemblies have not been free from disadvantages of which, perhaps, overcrowding has been the greatest. We offer the above suggestions, not as reflecting mismanagement on the part of the organising committees of past congresses, but in the hope that in the future modifications on the lines we have hinted at may increase the value of discussions which are the result of much thought and labour.

WHILE public attention is still occupied with intelligence from the theatre of war everything about the wounded in war is read with interest. At the present time a number of soldiers may be found in our military hospitals who have been invalided from South Africa suffering from the effects of bullet wounds and other injuries received during the campaign. A state of lowered health and nervous depression which seems altogether out of proportion to their local injuries is unhappily very often present in such cases. It is perhaps only natural under the circumstances to seek for some explanation of the causes of this nervous condition outside those of a physical kind. In an article which appeared in THE LANCET of Sept. 15th (p. 807) Mr. MORGAN I. FINUCANE, civil surgeon attached to the Connaught Hospital, Aldershot, seems disposed to ascribe the state of such patients to the immediate or remote result of general nervous shock. He states that if the gunshot injuries of modern arms have apparently lost much of their seriousness, it would, nevertheless, appear that the resulting nerve-shock and injury to

the nervous system form some of their most permanent sequelæ, and he states that it is most difficult to treat such cases. He apparently suggests that some of the causes which are largely responsible for the development of such nervous phenomena may be of a moral rather than of a physical kind; that, quite apart from the surgical injuries sustained in such cases, they may be traceable possibly to the panic and disaster arising out of badly conceived projects. We think, however, that a perusal of the cases which he describes will lead to the conclusion that in some of them at least the conditions have arisen from the presence of physical causes. But, be this as it may, we doubt very much if this view is a tenable one. While it is easy to have recourse to speculative hypotheses of this kind, it would, we think, be very hard to prove them. And, what is more, the facts connected with the present war (if it is intended to imply that any widespread degeneration of the *morale* of our troops has taken place) all tend to point, and very decidedly so in our opinion, in the opposite direction.

It must be admitted that this war has been of an unprecedented character. It is not easy to conceive circumstances of a more trying description—an enemy who could not be seen and refused to be drawn, entrenched or occupying almost impregnable natural positions, frequent ambushes, smokeless powder, and the opposing Boers only disclosing themselves by firing when our attacking troops were in sufficient numbers and at the most favourable distances. But our troops boldly faced these conditions again and again with the most unmistakeable courage, their only regret being that they could not get at their foe face to face in the open. Men who know what war is and who have previously seen our troops fighting in the Indian mutiny and elsewhere have declared that there has been no falling off in their fighting qualities in South Africa, and officers from foreign armies—from Russia, Germany, Sweden, and America—one and all, have extolled their bravery, cheerfulness, and tenacity. The soldiers who have accompanied and fought under General BULLER in his hardest fights on the heights of Natal and the remnant of the besieged army of Ladysmith have been transformed into veterans and have since been following him, storming heights and capturing positions with undaunted vigour and confidence in a mountainous country like that of the Tyrol. They, to say nothing of the troops with General FRENCH and other generals, have passed through terrible ordeals. They must have gone through states of nerve tension again and again, but apparently only to become seasoned to danger instead of degenerating. It is simply a platitude, of course, to assert that men are not all constituted alike as regards courage and fortitude, and even the bravest men are well known to differ greatly in the way in which they bear pain; but the history of this war has served to bring out the fact that the courage of the wounded has been undaunted and that their thoughts while in hospital have not been concentrated on themselves but rather on their comrades in the fighting ranks at the front. In the possession and display of this quality, too, there has been no difference between the veterans of the regular army and the colonials and volunteers who had never previously seen a shot fired in actual warfare. While we may readily allow that the terrible stress and strain of battle may make an indelible impression on the nervous system and prejudicially affect the health and retard the recovery of the wounded, it nevertheless seems astonishing that such an occurrence is not more frequent than it is. Where the nerve-centres or nerve-trunks are injured the case is different of course.

The soldier's "nerve" is, we know, not everything. Great strategical and tactical ability and skill and other qualities of mind and character are likewise necessary for the successful conduct of war, but the empire has nevertheless reason to be profoundly grateful to Providence that our race is not lacking in that splendid physical courage which, after all, is, and must always be, the foremost characteristic of the soldier.

Annotations.

"Ne quid nimis."

EXPERIMENTAL PROOF OF THE MOSQUITO-MALARIA THEORY.

WE publish an interesting article by Dr. Patrick Manson on the Experimental Proof of the Mosquito-Malaria Theory. A large amount of literature has recently appeared on the subject and the results of the various expeditions which have been despatched to malarious districts to investigate the causal relationship of mosquitoes and malaria are well known. Dr. Manson points out that it is of supreme importance that the public generally, more particularly those who reside in regions where malaria is endemic, should be convinced that certain species of mosquitoes can convey the disease to man. There is no proof so telling as experimental proof. Consequently Dr. Manson cast about for means by which the conversion and coöperation of the public might be secured. The tertian variety is the least harmful, and for obvious reasons the experimental insects were fed on persons suffering from this form. Mr. P. Thurburn Manson offered to submit himself to be bitten by these insects which had been forwarded to England, with the result that he became infected with an attack of tertian fever. Full details of the experiment will be found in Dr. Manson's paper, and the thanks of all are due to his son for thus having practically demonstrated the truth of what had hitherto been theory. Experiments equally important were carried out by Dr. Sambon and Dr. Low, Signor Terzi, and two Italian servants, in the Roman Campagna at a spot known to be intensely malarial. By taking every precaution against the bite of the mosquitoes they remained entirely free from infection, in marked contrast to their neighbours, who were either ill with fever or had suffered malarial attacks. Dr. Manson's remarks on these experiments are to the point and should lead to the adoption of precautions whereby a terrible and widespread evil may be prevented.

THE GENERAL ELECTION.

IN less than a week from the time when we go to press the general election will have commenced and our readers will, no doubt, find interesting a list of the members of their profession who have decided to contest seats. The following members of the late Parliament have, we understand, decided to appeal again to their constituencies. R. Ambrose, L.R.C.P. & S. Edin. (Mayo West); G. B. Clark, F.R.C.S. Edin. (Caithness-shire); John Dillon, L.R.C.S. Irel. (Mayo East); R. Farquharson, M.D. Edin. (Aberdeenshire

West); Sir B. W. Foster, M.D. Erlang., F.R.C.P. Lond. (Derbyshire, Ilkeston); Sir M. Foster, M.D. Lond., K.C.B. (London University); J. F. Fox, M.D. Univ. Cincinnati, F.R.C.P. Kingston, Canada (King's County, Tullamore); M. A. MacDonnell, M.D. R.U.I. (Queen's County, Leix); Sir George Pilkington, M.R.C.S. Eng., L.S.A. (Southport Division of Lancashire); C. K. D. Tanner, M.D., M.Ch. R.U.I. (Mid Cork); and Sir J. Batty Tuke, M.D. Edin. (Edinburgh and St. Andrews Universities). The following are the new candidates so far as we have at present ascertained: Conan Doyle, M.D. Edin. (Edinburgh Central); A. P. Hillier, M.D. Edin. (Stockport), V. H. Rutherford, M.B. Cantab., L.R.C.P. & S. Edin. (Yorkshire, Osgoldcross). Sir Charles Cameron has, we regret to hear, decided not to seek re-election at the hands of his Glasgow constituents. It should be noted that Sir R. B. Finlay, the Attorney-General, who seeks re-election for Inverness Burghs, is an M.D. of Edinburgh, and was at one time a medical practitioner, while, as many of our readers are aware, Sir W. Cameron Gull, Bart., Q.C., who is seeking re-election for the Barnstaple Division of Devonshire, is the son of the late Sir William Gull, M.D.

WORKHOUSE NURSING.

AT a recent meeting of the Hampstead Board of Guardians some dissatisfaction was expressed because the medical officer of the workhouse, Dr. E. C. Taylor, had directed that a trained nurse should be engaged to attend on a child in the workhouse who happened to be suffering from measles. The chairman of the board was reported in the local press of Sept. 15th to have said that the child could have been attended to by any of the women engaged to look after the children and that it was a monstrous thing to go to the expense of having a trained nurse. Unless "the women engaged to look after the children" are accustomed to nurse severe cases of illness, we are decidedly of opinion that the chairman's views are retrograde and in every way unfortunate. In home nursing the ties of affection among relatives serve in some degree to make up for want of proficiency in the duties, but long experience has demonstrated that amateur nursing in Poor-law institutions is only too apt to be conspicuous for its shortcomings.

POISONING BY COAL GAS.

IN THE LANCET of Sept. 15th, p. 820, we had occasion to condemn the water-slide gas pendant as a most dangerous fitting, prone indeed to such a number of defects as to warrant its exclusion altogether from household appliances. This conclusion was based upon a case of coal-gas poisoning at Birmingham in which it was shown that one life was lost (and nearly two) through the defects of this clumsy gas accessory, but there is quite a historical record of the dangers of the chandelier. Another remarkable case of coal-gas poisoning has since occurred, but this time it was due to a defective shilling-in-the-slot meter. It would appear that the meter was fixed without being tested by the gas-fitter of the company for the reason that he had not got a shilling for making the test, nor did the company instruct him to inaugurate the working of the meter unless the shilling was supplied by the consumer. According to the evidence brought forward at the inquest, however, the meter leaked in spite of the fact that no shilling was put in the slot, and this leakage cost two lives, those of a father and son. We are surprised at the extraordinary method of the company and trust that such a procedure is not the universal rule. Clearly it was the duty of the company's official to have tested the meter and to have ascertained that it was fixed properly. The meter, it should be remembered, is the property of the company. The jury, however, found "that the deceased died from suffocation by coal gas the result of an escape at the meter and that such deaths were due to accidental causes." In our opinion it should be impossible for such an "accidental" cause as this to arise and the gas companies should be compelled to test a meter after it has been placed in position and should be made responsible for any consequences that may arise from its defective attachment. In the *Journal of Gas Lighting* of Sept. 18th appears an article on questions of gas poisoning in which an appreciative and complimentary reference is made to our attitude which was defined in an annotation in THE LANCET of Sept. 15th on the question of the danger of water-slide gas pendants and the subject of coal-gas poisoning in general. But in view of the recent case of coal-gas poisoning through a defective meter we cannot refrain from quoting two sentences in this article and placing them side by side with the evidence which was given by the gas-fitter in the employment of the Tottenham and Edmonton Gas Light and Coke Company at the inquest held on Sept. 22nd:—

Morning Leader, Sept. 24th, 1900.

William Shields, of the Tottenham and Edmonton Gas Light and Coke Company, who fixed the meter stated that he asked Mrs. Sanders for a shilling to test the meter, but was several times refused. He left the meter untested. Had he been given the shilling he would have discovered the leak at once. When he tested the meter in the presence of the coroner's officer he found a leakage in the outlet pipe to the extent of one foot in 20 minutes.

Journal of Gas Lighting, Sept. 18th, 1900.

The use of town's gas is increasing so fast, and spreading so widely among the poorer and less educated grades of the community, that accidents must be expected now and again. The circumstance that the users of prepayment gas-meters have their fittings put in by the gas company is an effectual protection against any mishap attributable to flimsiness of material, unsafe design, or fraudulent workmanship on the part of some local fitter.

We take it that the writer was referring to the ordinary gas-meter, but surely the same "effectual protection" should be afforded (if such is the case) when slot-meters are fixed. If not the company should be held responsible for any accidents which arise through the defective fitting of the meter which they supply.

ALLEGED HOSPITAL MISMANAGEMENT.

NOT infrequently reports of inquests and other inquiries appear in the daily press which tend to throw considerable discredit upon hospital management. Fortunately, in the great majority of cases investigation shows that the facts have been grossly perverted or are entirely devoid of truth. Quite recently an inquest was held on the body of a man, aged 46 years, who had suffered from "paralysis" for some years. Whilst walking along the street he stumbled and fell, striking his arm violently on the kerb. He gradually became very ill and was taken to the Camberwell Infirmary, where he died. It was then ascertained that he had sustained a comminuted fracture of the right arm near the shoulder, the cause of death being "pneumonia consequent upon the injury." It was stated in evidence that he had said that he had been attending St. Thomas's Hospital for the injury, and Mr. W. J. C. Keats, the medical superintendent at the Camberwell Infirmary, drew attention to the fact that the arm was simply bandaged and not put in splints, as it should have been, and naturally added that whoever examined the arm could not have done so thoroughly. The second case which came before the same coroner was that of a man who was thrown from a hearse and was taken to St. Thomas's Hospital, where his side was strapped and he was allowed to go home. He subsequently died from bronchitis. It was alleged that the strapping was only applied at the request of a friend of the injured man. The coroner on each occasion allowed remarks from the jury which threw all the blame on the medical officers of the hospital and intimated that he should write to the hospital

authorities on the subject. In doing this he was acting perfectly within his duty, but it would have been well if he had requested the jury not to have censured the hospital officials without further proofs of the alleged neglect. We have made inquiries at the hospital which place a very different complexion on the two cases and entirely exonerate the house surgeons. The man with the fractured arm does not appear to have been treated at the hospital; his name does not appear in the casualty book and none of the officials on duty have any recollection of such a case. The patient erred, therefore, in stating that he had been to St. Thomas's Hospital. With regard to the case of fractured ribs, the house surgeon strapped the chest as the best method of treatment and not at the suggestion of the patient's friend. Unless there is some complication such cases are not admitted as in-patients, and when the man was examined there was no bronchitis. It is to be regretted that reports such as those to which we have alluded above are so widely published in the lay press; full inquiries should be made before responsible bodies such as coroners' juries are allowed to make remarks which unjustly tend to damage the reputation of our large hospitals by alleging carelessness in examination and want of proper treatment on the part of the medical officers.

INTOXICATION BY CANNABIS INDICA.

IN the September number of the *Edinburgh Medical Journal* Dr. James Foulis of Edinburgh gives a lengthy account of two cases of poisoning by cannabis Indica. The patients were brothers, A and B. A was 22 years of age and was a medical student in his third year; B was 20 years of age, an art student, and of a highly strung and sensitive nature. Both of them were tall and powerful, being nearly six feet in height. When Dr. Foulis, who had been hurriedly sent for, arrived at their house he found them in the dining-room, alone and only partially dressed. A was hanging tightly on to B who was rushing round the table in a very excited state, wildly throwing his arms about and singing in a most jovial manner. A was evidently doing his best to control B; he looked pale and depressed as if overweighted by some sense of heavy responsibility. Both in mind and body B was in a state of extraordinary excitement. He appeared as if he could not talk fast enough and as if his arms and legs were acting automatically. B threw his arms round Dr. Foulis in a loving embrace and spoke most kindly and even tenderly to him, then all of a sudden he began to quote poetry and in an excited manner asked which poet Dr. Foulis liked best, naming several one after another. As the other inmates of the house were unable to control the young men they were removed to the Edinburgh Royal Infirmary where they arrived about 1 A.M., two and a half hours after having taken the drug, and at 9.30 A.M. they were sufficiently recovered to return home. A, the medical student, afterwards wrote a description of the occurrence, in which he stated that with a view of experiencing the wonderful dreams said to be produced by haschish or cannabis Indica his brother and he on three successive occasions took doses of the drug. On the first occasion they took 25 minims of the tincture, on the second occasion (a week later) they took over 40 minims, and on the third occasion (three weeks later) they took over 90 minims, with the results above described. In about 20 minutes they both began to feel exhilarated. A felt decidedly pleased with himself and versatile. Then one of the figures in a drawing at which he was looking began to nod and whirl round. Suddenly he felt himself carried away as it were by a whirlwind and finally lost consciousness. The next thing he remembered after regaining consciousness was the room heaving up and down. When Dr. Foulis arrived on the scene a most vivid picture presented itself to A's mind. He seemed to see Virgil and Dante standing on a rocky ridge overhanging a deep abyss whence were issuing multitudes of lost souls on their way to Hades. A imagined himself standing on that ridge watching the unending and ever-moving throng passing out of sight. The effect of the drug lasted to some extent for three or four days, during which they were in an extremely unstable state of mind and had to keep a constant guard over their actions. On the afternoon of the following day B had another attack. B's account of his dreams on falling asleep at the Infirmary was as follows: "Upon falling to sleep I experienced the most exquisite dreams. The sky was scintillating with delicate colours rapidly succeeding one another. Then came shifting landscapes of unimaginable beauty, following fast upon each other, and all too quickly disappearing." It is of some interest to compare the foregoing account with Mr. Havelock Ellis's description of the intoxication produced in himself by mescal buttons (the fruit of the Anhalonium Lewinii) as recorded in THE LANCET of June 5th, 1897, p. 1540.

MASONIC HONOUR TO SIR GEORGE HARE PHILIPSON.

SIR GEORGE HARE PHILIPSON, M.A., M.D. Cantab., D.C.L. Durh., F.R.C.P. Lond., was recently entertained at dinner by his brother Freemasons of Northumberland and Durham to celebrate his knighthood at the hands of Her Majesty and to testify to the esteem in which he is held by Freemasons and by the medical profession. Quite a large gathering of Freemasons, among them being many medical men, assembled at the County Hotel, Newcastle, where the dinner was held under the chairmanship of R.W. Bro. the Right Hon. Sir Matthew White Ridley, Provincial Grand Master of Northumberland. The toast of "Our Guest" was most enthusiastically received and drunk with musical honours. The Chairman, in proposing it, said it was an open secret that the medical profession intended to do honour to their guest in their own way, but he was certain that the Freemasons of the two counties were not less anxious to show Sir George Philipson the honour which he deserved than was the medical profession. For 28 years Sir George Philipson was acting physician at the Newcastle Infirmary and was never a day absent from duty. That in itself was an honourable career, and they all knew how much the infirmary owed to him. He was at the head of the medical profession in the North of England, and no man deserved better all the honours which had been conferred upon him than did their guest. In every walk of life Sir George Philipson had endeared himself to every section of the community.

IDIOPATHIC TRANSITORY CLOUDING OF CONSCIOUSNESS.

UNDER the above title Dr. Placzek of Berlin reports some interesting cases in an article recently published in the *Berliner Klinische Wochenschrift*, No. 32, 1900. Two of the cases were examples of temporary loss or disturbance of consciousness amounting to mental aberration and therefore important from a medico-legal point of view. The first case was that of a woman, aged 40 years, who suddenly one afternoon and without any warning became irrational in language and behaviour, gesticulating wildly and talking unintelligibly. This condition lasted for six hours (till 8 P.M.), when she recovered. She, however, had no recollection of her state or conduct during these six hours. It was found that she was menstruating at the time of this attack, but no connexion could be traced between menstruation and her illness. The following day she had a typical attack of migraine with muscæ volitantes, scotomata, and other visual disturbances. She was said to have suffered at times from headache, but she was free from any stigmata, hysterical

or epileptic, and her previous history was good. The second case was that of a man, by occupation an engine-stoker, who suffered from an attack of clouding of consciousness. During this condition he failed to recognise his friends and relatives and was very irritable and rough in manner. This condition lasted only a short time and then in the course of an hour he suddenly recovered. He was stated to have been a sufferer from trigeminal facial neuralgia and painful cramps of the muscles of mastication. In discussing the causation of these seizures Dr. Placzek thinks that there occurs in these cases a marked disturbance of the cerebral circulation, and refers to somewhat similar symptoms which are met with in those who have been resuscitated from strangulation by hanging—a condition in which one of the most marked features is the constriction of the carotid arteries in the neck. It is of importance to recognise that such occurrences as temporary clouding of consciousness and loss of emotional control may occur, apart from epilepsy, hysteria, or insanity, and in persons free from grave neurotic or traumatic taint. Dr. Placzek refers to a few such cases which have been recorded in literature by Azam, Krafft-Ebing, Möbius, Charcot, and Féré, and which possess a practical and medico-legal bearing.

ROYAL ARMY MEDICAL CORPS SOUTH AFRICA FUND.

SUBSCRIBERS to this fund will recollect that the committee sent £200 to the principal medical officer in India to be expended on warm clothing for the Indian dhoolie-bearers and hospital servants. No formal acknowledgment having been received Surgeon-General H. S. Muir wrote on August 10th to the principal medical officer asking if he could give any information. Surgeon-General W. Taylor, in reply, mentions having duly sent a copy of the subjoined letter soon after he received it but it never reached its destination.

Copy of a letter dated June 23rd, 1900, from the Secretary to the Government of India Military Department to the address of the principal medical officer, Her Majesty's Forces in India.

"1. I am directed to acknowledge the receipt of your letter No. 2491, dated June 14th, 1900, reporting that a consignment of warm clothing—namely, khaki serge blouses and knickerbockers, puttees, and puggarees provided from funds placed at your disposal by the committee of the Royal Army Medical Corps South Africa Fund—has been despatched by the Royal Indian Marine ship *Clive* to the General Officer Commanding Line of Communications, Natal, for distribution among Indian hospital followers in Natal. 2. With reference thereto I am to request that the thanks of the Government of India may be conveyed to the committee for their generous gift."

EX ORIENTE SEMPER ALIQUID NOVI.

A PAPER on the Reorganisation of the British Medical Association was read before the Hong-Kong and China branch of the association by Surgeon-General G. J. H. Evatt on April 29th, 1898, and has just been published as a pamphlet of 31 pages by Messrs. Hoyten and Cole, Russell-street, Plymouth. To carry out his proposals would involve great changes in existing methods. Commencing with the branch organisation he recommends that the county should be the "unit" and the Parliamentary electoral division the "primary unit." There is no objection, he says, to several counties uniting in a branch, but each county ought to have its own separate and complete organisation for county purposes, to advise and to watch the proceedings of the county council of the county, "a source of constant anxiety as to its action regarding medical men." There should, therefore, be in every county within the branch a district or county council of the British Medical Association under its own chairman (not president) and with its own secretary for the county. When election time comes round the "primary units" can by letter or interview make known their opinions to the local competing candidates and obtain replies. For scientific work he would create an academy of medicine for the county or branch, having as its *ex-officio* principal the chairman of the British Medical Association district or county council. With regard to the central organisation of the association, he would have the president elected by "the universal suffrage of every member, attached or unattached," of the association, voting papers being used, as in the election of Direct Representatives on the General Medical Council. This president would have a good salary, at least 1*s.* per member per year, would wear a badge and chain of office, and would hold office for three, four, or five years. Surgeon-General Evatt has a good deal to say with respect to the *British Medical Journal*, but perhaps his most startling recommendation is that the sections of the annual meetings should be raised into faculties with professors and deans of faculties, that these faculties should be grouped into post-graduate colleges established in different parts of the United Kingdom, and that these colleges should in time be combined "into a post-graduate university conferring a Doctorate in Medicine, a higher degree in surgery like the F.R.C.S., and finally a D.P.H. diploma."

TWISTING OF THE PEDICLE OF A PAROVARIAN CYST DURING PREGNANCY.

IN the *Boston Medical and Surgical Journal* of August 30th Dr. F. B. Lund has published a case of this condition. Torsion of the pedicle of parovarian cysts is rare because their pedicles are short or even absent, and because the tumours are regular in form. On July 13th, 1899, at about 4 P.M., a married woman, aged 27 years, while reaching over a table was seized with severe pain in the right inguinal region accompanied by vomiting. She was seen at 8 P.M. when she was in bed and complained of severe pain in the right inguinal region, which recurred every 10 or 15 minutes. Her second and youngest child was born 10 months before. Menstruation had returned seven months before and been regular until three months before, when it ceased. She had morning sickness, vaginal discharge, and increased frequency of micturition, and believed herself to be three months pregnant. Examination revealed a fluctuating abdominal tumour larger than a three-months pregnant uterus, which extended upward to the umbilicus, occupied the hypogastric region, and extended more into the right than the left inguinal region. On bimanual examination the cervix was found to be soft and patulous and an extremely tender mass was felt in the right fornix. Owing to the spasm present the epigastric tumour could not be distinguished from the uterus. The temperature was 100° F. and the pulse was 90. The pains continued during the night. In the morning a small tender mass was felt in the right iliac region suggesting a swollen appendix. Appendicitis with pregnancy of longer than three months' duration (to account for the large size of the supposed uterine tumour) were thought probable. A short incision through the outer part of the right rectus muscle revealed a twisted pedicle which was composed of broad ligament and enormously dilated veins, some of which must have been ruptured, as there were extensive sub-peritoneal ecchymoses. A cyst with thin translucent walls and dark from dilatation of its vessels was seen behind and above the uterus, which was of the size of a three months pregnancy. The rectus incision was sewn up and a longer one was made in the linea alba. The cyst was tapped and about a quart of thin smoky fluid was removed. The pedicle, which was twisted about three times on itself, was untwisted and tied in sections with silk. Recovery was uneventful. Examination of the specimen showed it to be a parovarian cyst with a

capacity of 700 cubic centimetres. In January, 1900, the patient was delivered of a son.

THE LATE SIR JAMES PAGET.

SIR JAMES PAGET'S memoirs and letters, with selected essays and addresses, are being prepared for publication. We are asked by Mr. Stephen Paget (70, Harley-street, W.) to say that he will very gladly receive any letters, or copies of letters, that may be sent to him for this purpose.

FACTORS IN LIFE ASSURANCE.

IN his presidential address delivered before the Life Assurance Medical Officers' Association Dr. C. Theodore Williams dealt with the question of Race in Relation to Life Assurance and gave some interesting details as to the mortality and expectation of life in various European States. Taking an average of 25 recent consecutive years the deaths per 1000 of the population in the several countries were found to be as follows:—United Kingdom, 19·6; England and Wales, 19·8; Scotland, 20; Ireland, 18·1; Denmark, 18·8; Norway, 16·8; Sweden, 17·3; Austria, 29·9; Hungary, 35·4; Switzerland, 21·7; German Empire, 25·2; Prussia, 24·9; Netherlands, 21·8; Belgium, 21; France, 22·6; Italy, 27·8. The figures for 1897 in every case show a reduction on the 25 years' average except in Ireland, where the rate rose from the 25 years' average of 18·1 to 18·4 in 1897. Norway appears to possess the lowest death-rate in Europe, the figures for 1897 being only 15·4. With regard to complete expectation of life in different countries, the British figures are at all ages slightly less than the American and slightly greater than the German and French. At 20 years of age the figures are: American, 42·199 years; British, 42·101 years; German, 39·683 years; French, 41·839 years. At 60 years of age the figures are: American, 14·098 years; British, 13·808 years; German, 12·848 years; French, 13·287 years. In a paper on Locality and Occupation in relation to Life Assurance, read before the same Association by Dr. G. V. Poore, attention was drawn to the exceptionally high mortality of inn and hotel servants in London and to the prevalence of phthisis among them, their mortality from this disease being four and a half times that of occupied males in agricultural districts. Dr. Poore considered that the liability of this class of workers to phthisis and respiratory disease was largely attributable to the design of the houses in which they live.

ABNORMAL NERVE-SIGNS AND OTHER DEFECTS IN CHILDREN.

A COMMITTEE of the British Association presented a report at the last annual meeting summarising an extended series of observations on the face, hands, and eye-movements of children, as signs of their brain condition indicated by attitude and movement. The facts upon which this report was based are "all the cases with any abnormal nerve-signs, occurring in the records of the Childhood Society among the 50,000 children examined." The cases are grouped as presenting signs in (1) the face, in its expression, frowning, grinning, &c.; (2) the hand, in its balance or finger-twitchings; (3) the eye-movements, as wandering or not under control; (4) in balance of the head, spine, or other parts, &c. The report says, in making a rapid observation of children it is sometimes convenient to examine and classify cases according to the part of the body in which irregular action is seen, in place of indicating the detailed points observed, though 21 signs in all have been defined. It appears that the hands when held out free on direction to do so were in 1520 boys and 1138 girls dropped, slouching, held asymmetrically, or showed finger-twitching and over-action. The face in 1133 boys and 570 girls was lacking in expression and tone or showed twitches and other irregular action, while "eye-movements" were not well under control in 351 boys and 259 girls. It is thus obvious that much may be learned from the hand-balance and steadiness of the fingers as signs of a well-trained brain or its disorderliness; these points, as well as good control of the eyes to attention under direction and good expression in the face, are objects that deserve careful notice both in diagnosis and in school training. This is the eighth annual report of the committee. Among results of their work evidence has been advanced on many interesting problems. With certain constitutional conditions of congenital deficiency and acquired defects as found among boys and girls respectively, the status varies in the age-groups. The main classes of defect are more frequent with boys, while the girls with defective constitution tend in larger proportion than the boys to ill-health. The heavy mortality of infancy falls principally on the boys and is largely due to developmental defects, while the children with such congenital defect who survive add largely to the number of dull and delicate persons in after-years. It has been shown that good effects follow the employment of physical training at school in diminishing the proportion of dull pupils. An important mathematical paper on Association of Attributes in Statistics, with Illustrations from the Material of the Childhood Society, &c., by Mr. G. Udny Yule, has been published in the Philosophical Transactions of the Royal Society, affording confirmation of some of the deductions made in this report, while giving valuable suggestions for improved methods of statistical research on these lines.

TYPHOID FEVER IN MERTHYR.

WHENEVER there is an outbreak of typhoid fever in the mining districts of the midlands or of the north of England it is nearly always found to be more or less associated with the method of disposal of excrement that prevails in the particular locality affected, and it is even sometimes suggested that the substitution of water carriage for conservancy would put an end to these epidemics of enteric fever. That this view is not altogether borne out by experience elsewhere is shown by the only too frequent outbreaks of typhoid fever in the densely populated colliery districts of South Wales where water carriage is all but universal. During the whole of the present year Merthyr, which has a population of about 75,000 persons, has never been free from the disease and up to the middle of September there were as many as 214 cases notified. In the first half of the year the death-rate was equal to 0·5 per 1000 per annum or double the rate that was recorded in the adjoining districts of Aberdare and Rhondda and two and a half times more than the typhoid fever death-rate recorded in England and Wales in 1899. It is now more than 30 years since a sewage farm was established at Merthyr and the filthy privies and middens so common in the north of England are noticeably absent from the town; there are two fever hospitals and an abundant supply of water has been provided by the council who are even now enlarging their gathering grounds. But the Merthyr Council, like so many other sanitary authorities, appears to imagine that having completed such large undertakings as these their responsibility ends, forgetting that one of the most important duties imposed upon them by the Public Health Acts is to seek out and remedy by constant inspection of their district any insanitary conditions that may exist. The neglect of this duty has probably much to do with the present outbreak of typhoid fever in the town. The newly-appointed medical officer of health, Dr. C. E. G. Simons, will find himself altogether handicapped unless he is thoroughly supported by the members of the council in taking necessary action against individual property owners

and unless he is provided with a sufficient staff of competent inspectors to carry out frequent house-to-house visitations.

THE SMOKE NUISANCE.

THE Metropolitan vestries must be fast asleep again judging from the undoubted recrudescence of the smoke nuisance during the past few weeks. We beg to stir them up once more. We have observed several chimneys in the immediate neighbourhood of THE LANCET Offices emitting dense volumes of black smoke and the nuisance proceeds on all sides with the most consummate disregard of the Public Health Act. We will point out the exact sites where the offence is committed if desired. Nor is the offence intermittently committed but continuously for days and weeks. What has become of that excellent movement, the Coal Smoke Abatement Society, so ably backed by Sir William Richmond with the view of stirring up the vestries to their sense of duty in this matter? Several chimneys in the Strand district and "over the water" have been pouring forth black smoke during the whole of the lovely weather which we have fortunately been experiencing this September. The days have been delightfully bright and the atmosphere particularly clear, only to be besmirched by persons who impudently commit this offence and in brazen defiance of the law. It is monstrous. Perhaps the vestry officials are away on a holiday. If so, the sooner they return the better, that they may chasten their deputies for what they have neglected to do and take action themselves immediately to suppress the evil.

LOCAL AUTHORITIES AND ISOLATION HOSPITAL ACCOMMODATION.

A MEMORANDUM has just been issued by the Local Government Board on the provision of isolation hospitals by local authorities. In the main it follows the lines of the memoranda on this subject which have been issued by this department in past years and which have already done much to aid the satisfactory construction of isolation hospitals throughout the country. The advantages to every sanitary district of possessing a properly equipped hospital in readiness to meet emergencies are first set out. When isolation hospitals were novelties to the public more was no doubt claimed for them by some of their advocates than would now be admitted in view of the large practical experience since gained, and also of the better knowledge which we now possess of the multifarious ways in which infectious diseases may spread otherwise than by direct human intercourse. Nevertheless, the arguments in favour of these hospitals are very strong. That which perhaps appeals most to the public is touched upon in the memorandum, namely—the insurance which an isolation hospital affords against troublesome and prolonged interference with the business occupations of persons in whose households infectious sickness occurs and who are unable in most cases to arrange for adequate isolation in their own homes. There is no need, however, at this date to labour any points such as this. The isolation hospital has in this country come to be looked upon as essential to the satisfactory sanitary equipment of a local authority. No district that has set up an isolation hospital has ever, so far as we know, dreamt of abandoning it. The memorandum in question sets out the various points which the Local Government Board require to be complied with if the hospital is to be a permanent building erected out of money raised by loan. No definite proportion of beds to population is laid down, although one bed per 1000 is hinted at, where ward blocks are sufficient in number. A site of sufficient area to permit of future extension is advised; it should not, "of course," be in a very populous neighbourhood. In the case of small-pox hospitals the Local Government Board refuse to sanction a site which has within a quarter of a mile of it "either a hospital or a workhouse, asylum, or any similar establishment, or a population of as many as 200 persons," or within half a mile of it "a population of as many as 600 persons, whether in one or more institutions, or in dwelling-houses." These limits are the same which have been insisted upon by the Local Government Board for some years past in view of the demonstrated ability of small-pox to spread round small-pox hospitals. Precautions against aerial spread of this disease are clearly desirable. But rigid application of the above limits, as, for instance, if a suitable site has to be rejected because it happens to be 420 yards and not 440 yards from a cottage hospital, seemingly might in some cases involve considerable hardship. A plan is given showing a typical arrangement of blocks on a small site—an administration block, a ward pavilion, an isolation ward block, and a laundry and mortuary block. The administration block "should contain quarters for the matron or caretaker, and a sufficient number of bedrooms for the nurses and servants who will be required to work the hospital when in full operation"—a most desirable requirement seeing how administrative quarters of hospitals are apt to become overcrowded during epidemics. It is advised that ward blocks should be one-storey buildings save in large hospitals or in exceptional cases. Day rooms for convalescent patients are not suggested. The minimum requirement of air space per bed is 2000 cubic feet and of floor space 144 square feet. The hospital is required to be surrounded by a wall or close fence at least six feet six inches in height. This regulation applies to hospitals in isolated country places as well as to those situated near to centres of population. In isolation hospitals of the former character in Scotland these high walls, which on account of their expense and somewhat forbidding appearance have drawbacks as well as advantages, are, we believe, generally dispensed with.

THE NOTIFICATION OF PLAGUE.

THE sanitary authorities of London have issued a circular, in accordance with an Order of the Local Government Board, informing all legally qualified medical practitioners that henceforth Section 55 of the Public Health (London) Act, 1891, under which small-pox, cholera, diphtheria, membranous croup, erysipelas, scarlet fever, and the fevers known as typhus, typhoid, enteric, relapsing, continued, and puerperal are notified, will include the disease known as plague and that it will be the duty of practitioners as soon as they become aware that a patient is suffering from this disease to send notice thereof to the medical officer of health at his office. It is sincerely to be hoped that no occasion will arise for testing the diagnostic powers of the medical practitioners of the country in regard to this disease. It is undoubtedly difficult for a practitioner to diagnose a disease which he has never seen. The best advice which we can give to our readers on this point is to recommend them to read carefully the reports of the Glasgow cases which we have been able to publish in recent weeks. Even if there be no further extension of the disease the perusal of them will still prove highly instructive and interesting, and if unhappily cases should arise they will be more quickly discerned by those who have thus studied the chief points of actual cases.

A RARE MONSTROSITY.

IN the September number of the *Maryland Medical Journal* Dr. H. G. Beck of Baltimore gives a description, with two illustrations, of a fœtus which was born on Feb. 3rd, 1900, at the end of the seventh month of the mother's third pregnancy. Her first labour (May 13th, 1898) was strictly normal and at full term: the child is still living and every

feature is perfect. The second was a miscarriage in the fourth month, the fœtus showing no signs of malformation. There was positively no evidence of maternal impression during the third pregnancy. The child was still-born: the presentation was not ascertained on account of hydramnios and sudden spontaneous delivery. The specimen, which has been placed in the museum of the College of Physicians and Surgeons in Baltimore, presented all the combined features of harelip, cleft palate, acrania, hydrencephalocele, and spina bifida. It was a female, it weighed 219 grammes (seven and three-quarter ounces), and measured 27 centimetres (10¾ inches) in length and 24 centimetres (9½ inches) in circumference of the body. The most striking condition was the absence of the cranial portion of the frontal and parietal bones. The eyes formed the uppermost part of the head and stood out prominently. The nose was broad and distinctly flattened. The neck, it might be said, was entirely absent, the head being attached directly to the body. The hydrocephalic brain and the cord and their membranes were exposed and unprotected by osseous structure. The brain had two distinct hemispheres separated by the longitudinal fissure, and its general contour and outlines very nearly approached the normal. The foramen magnum was entirely absent. The vertebral arches were deficient from above downwards as far as the lower dorsal region. The rest of the body and the extremities were apparently normally developed.

OPEN CABS.

WHY is it that London is not supplied with open cabs? Every provincial seaside town has its "fly," a conveyance which is a fairly respectable kind of well-upholstered landau very comfortable to ride in and certainly more commodious than that not particularly smart vehicle the London four-wheeler or "growler." From the point of view of health there can be no doubt also of the advantage of the "fly" and more especially, of course, when the weather permits the "fare" to ride in the open. The fact that the "fly" is more often open than not renders it also a more wholesome vehicle to ride in. Closed cabs are undoubted sources of infection, microbes infest the cushions and the mats on the floor, and the air might easily contain pathogenic organisms left by a previous "fare." On the contrary, the fresh air to which the "fly" is exposed renders its equipments fresh and wholesome, while infected air could not possibly linger. The closed cab, be it hansom or four-wheeler, is frequently "smelly" and "stuffy," for the simple reason that Nature's powerful cleansing agents, light and air, are excluded from purifying the interior. Again, persons of a decidedly nervous temperament would invariably choose the "fly" to ride in rather than the hansom. As to the latter vehicle, it is a sort of death-trap in wet weather when the "fare" is completely inclosed, as it were, in a shut-up box owing to the window fitting closely on the apron, which makes it nearly impossible for him to release himself in emergency, to say nothing of the possibility of being guillotined by the down-coming window. Even when the hansom is not closed it is a risky vehicle from the fact of the "fare" having to get in and out between the wheel and the horse's hind legs. On the other hand, the "fly" is a much more safe and commodious vehicle, offering every comfort, being easy to get into and out of, and if need be it can be closed, as in wet or cold weather, without much trouble. The "growler" is, of course, practically always closed—a fact, we think, which is hygienically objectionable. We urge the claims in favour of the "fly" over the hansom and four-wheeler, not only, however, on distinct hygienic grounds, but because we consider it to be a more acceptable vehicle than the London cab, be it hansom or four-wheeler, from every point of view. Why, then, again we ask, is it that London is the only town where such vehicles are never in evidence? At seaside and provincial towns, and some suburban places, the "fly" plies for hire both in summer and winter. We should welcome heartily any movement to bring about this very desirable reform in the manner of metropolitan travelling.

THE one hundred and twenty-eighth session of the Medical Society of London will commence on Monday, Oct. 8th, when an address, entitled, "The Romance of Surgery," will be delivered by the incoming President, Mr. John H. Morgan. The Lettsomian Lectures will be delivered in March and April by Dr. Mitchell Bruce, and the Oration in May by Mr. F. Richardson Cross.

THE death is announced of Miss Margaret Stokes, the distinguished Irish antiquary. She was a daughter of the late Dr. William Stokes, and consequently a sister of the late Sir William Stokes, who died in South Africa on August 18th. Miss Stokes was well known for her valuable work upon Celtic Christian Antiquities.

THE Old and Present Students' Dinner, Faculty of Medicine, University College, London, will be held at the Hotel Cecil on Monday, Oct. 1st, at 6.30 P.M. for 7. Dr. G. Vivian Poore will occupy the chair.

THE introductory lecture at the Royal Veterinary College will be delivered by Professor McFadyean, M.B., B.Sc. Edin., M.R.C.V.S., on Tuesday, Oct. 2nd, at 12 noon.

Mr. A. A. Bowlby and Mr. Cuthbert Wallace have returned to town after nine months' service in South Africa with the Portland Hospital.

THE EXTEMPORANEOUS AERATION OF LIQUIDS.

APART from the question as to why it is that effervescing liquids prove so attractive, it is a fact that the demand for carbonated waters or mineral waters has increased enormously of late years. The mineral-water industry is comparatively a recent creation and it is one of great importance when it is considered that aerated waters form a very large proportion of the water used for drinking purposes by the community. Effervescence is a quality in beverages that is much sought after and undoubtedly the presence of an excess of carbonic acid in a beverage modifies the taste of that beverage in a very important way which is not altogether easy of explanation. The fact that there is movement in a liquid, or briskness, or, as it is sometimes termed, "life," may account for the attractiveness of effervescing fluids. But the attraction does not rest with the bubbling appearance of the aerated drink. An effervescing liquid seems also more attractive to the palate and more acceptable to the stomach than a still liquid. Carbonic acid gas in solution is a well-known sedative to the gastric nerves and soda-water and champagne (especially iced) are known aids in obstinate sickness. The importance of the rôle, whatever it may be, that carbonic acid fulfils in an aerated beverage can hardly be exaggerated when it is generally accepted that champagne without its gas loses for the most part its exhilarating qualities and soda-water loses its palatability and refreshing qualities when it has become flat

The idea of artificially charging water with an excess of carbonic acid gas owed its origin probably to the fact that when sugary solutions or grape juice were allowed to ferment in closed vessels a sparkling liquid resulted. The operation, of course, required time. It was soon discovered that water could be made sparkling almost instantaneously by placing

it under carbonic acid gas at a considerable pressure and then bottling the liquid without removing this pressure. Nature herself has provided in many parts of the world waters supercharged with carbonic acid gas, but obviously the quantity of gas contained in these natural waters at the surface does not exceed more than their own volume, since under one-atmosphere pressure one volume of water takes up its own volume of gas, the volume retained in solution depending exactly upon the pressure under which the water is placed. The law on this point, stated briefly, is that the volume of carbonic acid gas contained in a water varies directly with the pressure to which it is exposed. Thus under one-atmosphere pressure water would contain its own volume of gas, under two-atmospheres pressure it would contain twice its own volume of gas, and so on. Accordingly by measuring the pressure of the gas in a bottle of soda-water it is easy to ascertain what quantity of gas is present in the liquid. The average pressure of most aerated waters is about four atmospheres, so that the water contains four times its volume of carbonic acid gas, three of which would be gradually discharged, producing effervescence on releasing the cork and exposing the liquid to the pressure of the air, and one of which would remain.

Several methods have been suggested for producing aerated water and many ingenious bottles have been contrived for preserving the water so prepared. As a rule most people are content to leave the preparation of aerated waters in the hands of the aerated water factor. Attempts, however, have been made from time to time to provide a small apparatus which would suffice to keep any ordinary household supplied with a quantity of aerated water made on the spot. The "seltzogene," for example, is a closed apparatus in which several pints of water may be aerated by placing in an upper chamber situated over the reservoir containing the water a mixture of tartaric acid and carbonate of soda which when moistened evolves carbonic acid gas, which slowly impregnates the water below and renders it effervescing. The simplest of all methods, however, of obtaining an effervescing water is to dissolve first an acid in the water and then to add a soluble carbonate such as carbonate of soda or *vice versâ*. But this method, of course, leaves a salt in solution which is a product of the interaction of carbonate of soda and tartaric acid and which renders the water unsuitable and unpleasant. Both methods of the extemporaneous aeration of water have recently been superseded by a much more ingenious arrangement.

We refer to the system known as Sparklets. This system has been before the public for some time, but its history has been progressive and the sparklets of to-day are a great advance upon the sparklets of some years ago. We remember when this system was shown as a novelty at a conversazione of the Royal Society It then consisted of dropping a recently-pierced steel bomb containing liquid carbonic acid into a bottle of water of suitable size.[1] As we anticipated, there were obvious objections to this method, since the carbonic acid which impregnated the water soon attacked the steel bomb and produced an unsightly liquid due to the unstable nature of the carbonate of iron formed by the action of the gas upon the steel bomb. This defect of what promised to be an interesting system of aerating waters was, however, soon removed, and in view of the great improvements that have since been effected and of the fact that this method is being adopted very largely in the household for the extemporaneous preparation of aerated liquids we have deemed it a subject which from the public health point of view is worthy of independent investigation. The need for independent investigation of this comparatively new system becomes more apparent when we consider the question of impurities which such a system might possibly entail. We have therefore turned our attention chiefly to the following points in regard to the method of aerating waters by the extemporaneous means so easily afforded by sparklets: (1) the safety of the method arising from (*a*) the sparklet or bomb containing liquid carbonic acid gas or (*b*) of pressure in the charging bottle; (2) the purity of the gas; and (3) the purity of the finished product and its chances of contamination.

The elucidation of these important questions amounts in reality to a hygienic inquiry, and any investigation on these heads would not be complete without a reference, which must be brief, to the interesting methods by which "sparklets" are made and to the manufacture of the liquid gas which they contain. The raw material for the preparation of carbonic acid gas used in the sparklet is coke, which, from the productive point of view, is carbon. Coke, however, contains other things besides carbon, which produce on combustion gases which are not wanted for the purpose and which are objectionable in character. A process of complete purification is therefore adopted. The coke is first burnt in a furnace in the ordinary way with a good supply of air. The gases resulting on combustion, containing chiefly carbonic acid gas, are thoroughly washed or scrubbed before passing into a strong solution of carbonate of potash. Here the carbonic acid is absorbed and inert gases are excluded. The process is carried on until the carbonate of potash liquor is saturated. At this point it consists of bicarbonate of potassium or potassium carbonate with, so to speak, a loose molecule of carbonic acid gas. This super-carbonated liquor is then boiled and the excess of perfectly pure carbonic acid is thus expelled, any sulphurous or sulphuric acid that may have been absorbed from the coke gases being retained. The pure carbonic acid gas thus evolved passes into powerful compressing pumps which drive the gas into steel tubes in a liquid state where it may be kept until required. Or the gas direct from the bicarbonate of potash may be forced into gas-holders to be afterwards liquefied previously to the charging of the sparklets. The purity of the gas may be gathered from the following analysis which we made of the gas contained in a sparklet:—

CO_2	...	...	...	...	99·75 per cent.
O	...	...	...	...	0·05 ,,
N	...	...	...	...	0·20 ,,

We very thoroughly tested the gas for traces of impurities such as sulphur dioxide or carbon monoxide, but we did not obtain the slightest experimental evidence that even in infinitesimal quantity such gases were present. As the above analysis shows the carbonic acid gas amounted to 99·75 per cent., while the difference from 100 is accounted for by the presence of traces of air.

The sparklet originally consists of a steel disc which is beaten into small shallow cups and finally into a small steel bottle provided with a somewhat wide neck, to which, after the liquid has been forced into the bomb, a steel cap is attached and made tight by means of a washer at the same operation of filling. The liquid carbonic acid is forced into the sparklets under a pressure of 60 atmospheres. The sparklets are, however, tested to stand the pressure of 500 atmospheres. They are further tested by being immersed when fully charged in water at 60° F., which is afterwards raised to 150° F. The precautions taken to secure sparklets of absolute uniformity in regard to capacity and weight are very remarkable and commendable, and such, indeed, as ensure the sparklet being quite safe. The sparklets, in fact, are every one of them standardised by means of a most ingenious apparatus before they pass into the hands of the person who fills them with liquid carbonic acid. The sparklets are again weighed after the filling process so that the exact amount of carbonic acid which they contain is known and controlled. In this way both an excess of gas which would be dangerous is avoided and an insufficiency is prevented which would fail for the purpose of complete aeration. We have taken several sparklets of the No. 2 size at random and we have found a remarkable uniformity in the weight of carbonic acid gas contained in them. The variation was so slight as to be quite negligible and unimportant. The maximum weight of carbonic acid in one bomb was found to be 4·417 grammes and the minimum weight 4·402 grammes. These quantities approximate to four and one-fifth pints of carbonic acid gas when measured at the average temperature of 15° C. The capacity of the bottle for which this sparklet is made we found to be exactly one pint. Thus the aerated water would be under four atmospheres pressure and contain four volumes of gas. This is approximately the pressure of ordinary machine-made soda-water, which suffices for all practical purposes. We have further examined sparklets containing a mixture of oxygen and carbonic acid gases so that the water, if desired, may be aerated with some amount of oxygen as well as carbonic acid. These sparklets are suitable for the 12-ounce bottle. On analysis the gas contained in them showed the following composition:—

	No. 1.	No. 2.
Carbonic acid ...	73·54 per cent.	77·60 per cent.
Oxygen...	7·46 ,,	7·00 ,,
Nitrogen	19·00 ,,	15·40 ,,

[1] THE LANCET, May 9th, 1896, p. 1307.

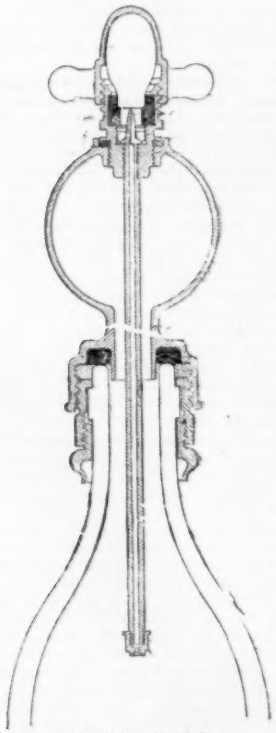
The presence of oxygen seems, however, to interfere with the complete aeration of the water by carbonic acid gas, although oxygen does undoubtedly soften the "sharpness" of taste of artificial carbonated water in general. It will be seen that the gases contain an important amount of nitrogen which is very sparingly soluble in water even under high pressure. Doubtless if the nitrogen were quite eliminated the aeration with the mixed gases would be more satisfactory.

FIG. 1.

Sparklet bottle with lever stopper.

Having described in some detail the accurate manner in which the sparklet is made and filled, and having recorded also the facts that the amount of gas in the same-sized sparklet varies within quite negligible limits and that the carbonic acid gas is as pure as it is possible to be, we may next consider the manner in which the extemporaneous aeration of water is effected by the sparklet. The aeration may be performed in a simple bottle as shown in Fig. 1 or in a bottle provided with a syphon tube (Fig. 3). The construction of the bottle and the charging tube is best explained in Fig. 2. The sparklet is placed in position just above the metal globe and just over a fine steel point. The neck of the sparklet placed downwards fits into a rubber washer. The bottle is then nearly filled with water and the charging apparatus attached by means of a screw so that the

FIG. 2.



Sparklet charging tube.

tube which delivers the gas just dips under the surface of the water. The screw cap at the extreme top of the apparatus is then screwed on, just covering the sparklet. The sparklet is thus brought to press upon the steel point, and carbonic acid gas escapes gently and uniformly and passes down the dip-tube through the water. A little shaking in order to facilitate the assimilation of the gas by the water completes the operation. It may be done in a few minutes and still water may be converted into aerated water within this time. Of course the result is better if time is allowed for the gas to dissolve in the water. We have noticed no evidence of risk attending this operation. It will be seen that the top of the charging tube contains a metal sphere which renders the carbonating process quite safe, this space sufficing to act as a cushion for the released gas, resistance being equal in all directions. As a further precaution the bottles are enclosed in a wicker cage. As a matter of fact, however, there is practically no record of bursting having occurred with the new form of sparklet bottle. Further, very great care is taken—and we have satisfied ourselves of this by inspection at the factories—to submit all bottles to a very severe pressure test which largely exceeds that which could ever obtain in practice even in the tropics. In these severe tests the proportion of bottles that fail to satisfy the examiner is exceedingly small and bursting is very rare indeed. The sparklet bottle is provided with a lever stopper attached to the neck of the bottle, so that if only a part of the contents is used the rest may be tightly corked and secured against getting flat or insipid by thus locking in the gas.

The sparklet syphon is a very ingenious arrangement. It holds about twice the quantity of water that the large-sized bottle does—that is, about two pints. Two sparklets of large size are used for the aerating operation. The construction of the sparklet syphon will be clear from a glance at Fig. 3. To obtain a syphon of soda-water aerated by the sparklet system the following is the procedure. First the bottle is nearly filled with water through a stopper at the side, and the stopper is replaced. There is a red mark on the shoulder of the bottle which defines the quantity that may be put in. Next a large sparklet is placed in position over the central tube and screwed gently down by means of the lever key. As with the ordinary sparklet bottle gas is discharged into the syphon, and by regulating the screw one way or the other the charging may be conducted with perfect uniformity and regularity. It is better to shake the syphon as the successive additions of gas are made. The quantity of gas discharged is under complete control and the operation can be done easily, as it should be, in instalments. As soon as the first sparklet ceases to discharge any further gas it is taken out by releasing the screw and a second sparklet is put in position in its stead and the same operation is repeated. There is no escape to speak of on the removal of the first sparklet since the valve opens inwards. The second sparklet is not removed until the syphon is empty. On the exhaustion of the second sparklet the lever key is made to take several turns until it rests on the edge of a metal gallery. At this point it becomes the lever of the syphon lifting the valve on depressing the key. The aerated water then escapes as with the ordinary well-known soda-water syphon. We have experienced no difficulty in producing in this way a syphon full of pure bright sparkling water. The convenience of the sparklet method of aerating waters is particularly manifest in the case of the sparklet syphon. We may add that the sparklet syphons are submitted to the same severe tests in regard to the pressure which they will stand as are the ordinary sparklet bottles.

FIG. 3.

Sparklet syphon.

The question of possible metallic contamination is one, of course, which must not be overlooked and we have made some definite experimental investigation upon this important point. To begin with, assuming that there is any prolonged contact of the carbonated water with any of the metallic fittings of the sparklet, these fittings are throughout coated with tin so that there is not at any part of the apparatus any metal which would form an injurious salt with the carbonated water or which would contaminate the water. While on this subject we may instructively refer to the experimental work of THE LANCET Special Analytical Commission on Mineral Water Machinery and Metallic Contamination. In this report, which was published in THE LANCET of Jan. 7th, 1893 (p. 43), it was shown that water saturated with carbonic acid gas under pressure easily dissolved lead, copper, zinc, and iron, but not tin. Since, then, the metallic fittings of the sparklet apparatus are effectively tin-lined it is difficult to see how any objectionable metallic

contamination of the water could take place. The only point of the sparklet apparatus likely to be attacked would be the dip tube which, however, is also tin-coated, but if stout capillary glass tubing could be substituted it would undoubtedly be an advantage, for the strain put upon metallic fittings by carbonated water is severe, especially when the metal is immersed for a long time. This question requires, however, very careful inquiry and we have made a series of experiments with the view of ascertaining whether in the sparklet any metallic contamination of the water took place. The results obtained leave little doubt that the water aerated by the sparklet method is free from metallic impurity. Occasionally slight traces of iron, however, were found in the water, due probably to the steel bomb, but never any poisonous metal. The presence of iron in small amount in carbonated water, though not objectionable from a hygienic point of view, makes the water unsuitable for admixture with wines or spirits or any beverage containing traces of tannin. Iron was never found in aerated water freshly made by the sparklet system or in water which was several days old, but only in aerated waters which were left to stand for weeks in the sparklet apparatus in order to make the test as severe as possible.

Obviously the easy extemporaneous aeration of liquids as afforded by the Sparklet system introduces a very wide field of application. By means of this system the aeration of all liquids may be easily effected and without any dilution. Milk, for example, can be charged straight away with carbonic acid gas without any addition of water at all, and undiluted aerated milk has been found to be an excellent beverage and food for invalids, especially where an irritable condition of the digestive functions exist. The sparklet, too, may be used for aerating wines without dilution or for making wine brisk which has become flat. To some extent the system of aeration by sparklets ensures the purity of the sparkling beverage, for the consumer can choose a special supply of water or other liquid of ascertained purity of character for the purpose. For transport purposes and for people in isolated parts of the world the sparklet system has proved invaluable, since it obviates the carriage of the water in aerated form; the water on the spot can be readily aerated by means of the sparklet apparatus. Lastly, the system of sparklets affords a ready means of preparing alkaline waters or waters containing mineral ingredients corresponding in character with those present in medicinal springs. Thus tablets are supplied for use with sparklets which when dissolved in the water subsequently aerated produce potash-, lithia-, or soda-water, or liquids approximating to the composition of Seltzer, Carlsbad, Vichy, and Malvern waters. As is well known an effervescent water affords a very agreeable way of administering these medicaments. Another interesting application of the sparklet system, and an important one for hospital purposes or for the sick room, is that iced carbonated water may easily be obtained by placing powdered ice in the bottle before charging. This method obviates the placing of the ice in the water after it has been aerated, which generally displaces a good deal of dissolved gas and tends, therefore, to render the liquid flat and insipid. Similarly syrups may be readily aerated; lime juice, lemon juice, &c., and a number of "fruit drinks" are prepared for the purpose.

The following are the conclusions to which we are led in regard to the sparklet system of aerating liquids by the experiments already cited:—1. The system is safe in view of the great care that is taken to test every essential part of the apparatus and carefully to gauge the amount of gas in the steel bombs before they are sent out of the factory.[2] The liability of bursting of the sparklet apparatus is no greater than in the case of the ordinary bottle or syphon of carbonated water. 2. The carbonic acid gas is very pure. 3. There was no evidence obtained that the system introduces any element of risk in regard to metallic contamination. 4. The system is easily understood and affords a simplicity of procedure in order to obtain a satisfactorily aerated beverage. 5. The system is applicable to the aeration of special liquids containing a standard quantity of drugs, in which case the suitability of the medicated water should be referred to the medical man. 6. Since the choice of water or liquid is left to the consumer some security can be obtained by this system as to the purity of the aerated drinks so prepared.

[2] Should a sparklet be exposed to excessive pressure either the washer would give way or the little cup be blown out, permitting the gas to escape in a comparatively harmless way. The safety of the sparklets for carriage and storage has been demonstrated by Professor Boys, F.R.S., and others.

ANNUAL REPORT FOR 1899 ON BIRTHS, DEATHS, AND MARRIAGES IN IRELAND.

BY the courtesy of the Registrar-General for Ireland we have been favoured with the thirty-sixth annual report for the year 1899. This is the first report that has been issued from the Irish Register Office since the untimely death of Dr. T. W. Grimshaw, C.B., who for very many years discharged, with great distinction to himself and to the entire satisfaction of his medical brethren, the duties of the office which have since fallen to Mr. Robert Matheson. The report for 1899, which, like previous issues, appears within a reasonable period of the close of the year to which it relates, is drawn up mainly on the same lines as those of the late Registrar-General. There are, however, certain additions and improvements in the present volume which have been introduced apparently for the first time, and to these we shall draw attention presently. According to the table on the first page the birth-rate in Ireland has scarcely changed since 1889; it was 22·9 last year, and differed from the average in the previous 10 years by only 0·1 per 1000. The marriage-rate was also very low, being only 4·9 per 1000 in 1899, but this is a trifle higher than the average rate in 1889–98. The report shows that the proportion of emigrants stated to have left one or other of the Irish ports was greater last year than in any year since 1895. The mortality from all causes last year was so low as 17·6 per 1000 living; it was the same in both sexes, and was slightly lower than the average rate in the previous 10 years. It appears to be customary in Ireland that a relatively large number of the population should die in union workhouses; this is especially noteworthy in Leinster and in Munster, where the proportion of the total deaths that are registered in workhouses is as high as 14·2 and 16·1 per cent. respectively. In this report we notice a new diagram (No. 2) which shows graphically the proportion of the total mortality that is due to the chief causes. This diagram is very instructive; it indicates at a glance the commoner causes of death that were most fatal and those that were least so in Ireland in the year 1899. We would fain see a similar diagram in the reports of the English Register Office. Among the ordinary infectious diseases, both typhus fever and typhoid fever seem to retain their hold very persistently on the Irish people: 117 deaths from the former disease and 890 from the latter having been registered in the year 1899; both these numbers, however, are considerably below the average. Influenza again became epidemic towards the close of 1899, and although not so fatal as in the year 1893 it nevertheless caused 1716 deaths in 1899, which is considerably in excess of the average. In passing from a consideration of the general and zymotic mortality to that of the mortality from tuberculous disease we notice an irregularity which might readily lead to misconception and which therefore we hope to see remedied in future reports from the Sister Isle. Whilst the general and the zymotic death-rates are stated in proportion to 1000 persons living we find that the mortality from tuberculous disease is stated in one paragraph as so many per 1000 and in the next paragraph as so many per 10,000 of the population. Rates are frequently calculated per 1,000,000 or per 100,000 of the population with the object of avoiding decimals, but there surely can be no object in giving the rates per 10,000 living, for in that case fractions would still be required, and they are actually given in the report before us. In England the rates are calculated either per 1,000,000 or per 1000 of the population. The plan is to be commended on many grounds, and we should be glad to see it adopted elsewhere. Opposite page 16 is given a map which shows by means of different colours the variations in the mortality from tuberculous disease in each of the Poor-law unions of Ireland. From this map it appears that in three only of the unions were the deaths from this cause less than 1 per 1000 of the population. In 83 unions the rate was under 2 per 1000, in 17 it was under 4 per 1000, in two it was under 5 per 1000, and in two it was over 5 per 1000. As is the case in England,

tuberculosis is more prevalent in the urban than in the rural districts of Ireland. Thus we find that although in the latter the mortality was considerably less than 1 per 1000, it was as high as 4·6 in Cork and Belfast and amounted to 5·7 per 1000 in the south and to 6 per 1000 in the north of Dublin city. Of the total deaths from tuberculous disease about five-sixths were caused by phthisis, the residue being referred to tuberculous meningitis, tabes mesenterica, or to "scrofula," with other forms of tuberculosis. The deaths from malignant disease in 1899 were in the proportion of 0·59 per 1000 living; they were considerably more numerous among females than among males. During the 10 years 1889–98, with one exception, there was a continuous increase in the mortality from these diseases. An instructive table will be found at page 19, showing the parts of the body invaded by cancer and also the rates of mortality at the various groups of ages. From this table we see that of the 2654 deaths from malignant disease registered in 1899, 497 were referred to disease of parts of the head and neck and that of these more than two-thirds occurred in males. 636 of the classified cases were deaths from cancer of the stomach: 283 females died from cancer of the breast, and 174 from cancer of the uterus. As is the case in England also the mortality from cancer is low during the first 20 years of life, but from the twenty-fifth year onwards it increases steadily until at the age-period of from 65 to 75 years it kills as many as 364 in each 1000 living at that period. A noticeable feature in the Irish registration reports is the record of meteorological observations in Dublin for each month in the year. The observations are taken by Sir John W. Moore, president of the Royal College of Physicians of Ireland, at his house in Fitzwilliam-square West. For more than 20 years these observations have been recorded daily and the results have been published in the *Dublin Journal of Medical Science*. But in Ireland the close relation of meteorological conditions to public health was recognised at an early date and Dr. Grimshaw was not slow in obtaining Sir John Moore's permission to print his returns as an appendix to his own earlier reports as Registrar General of Ireland. In recent years the scientific value of these returns has been increased for comparative purposes by the addition of corresponding observations taken by Sir John Moore at his country residence in county Wicklow. The detailed observations and remarks of this distinguished meteorologist, continued as they have been for a long series of years, form an instructive and valuable appendix to the reports of the Irish Registrar-General.

THE PLAGUE IN GLASGOW.

THERE is but little to add concerning the plague in Glasgow except that the number of cases has risen to 27.

In consequence of the appearance of plague in Glasgow and in view of the possible occurrence of cases in England and Wales the Local Government Board have issued an Order to sanitary authorities in "England and Wales (including London)." The Order applies as well to all vessels within the jurisdiction of a port sanitary authority or a riparian authority. The chief points of the Order are that plague is constituted a notifiable disease under the Notification of Infectious Diseases Act of 1899 and that sanitary authorities shall have the same powers and duties in relation to the notification of plague as they would have under Section 55 of the Public Health (London) Act, 1891, if plague were an infectious disease to which that section applied. Further, it shall be the duty of every medical officer of health to report to the Local Government Board any case of plague which may be notified to him or which may otherwise come or be brought to his knowledge and which may occur in the district or area assigned to his charge.

CLINICAL ASPECTS OF THE CASES OF PLAGUE.

The following are some notes from Dr. A. K. Chalmers upon cases of plague occurring since Sept. 13th, and are explanatory of their association, so far as is known, with previous cases. Some of the cases were, it will be seen, also mentioned in our issue of Sept. 22nd:—

1. Mrs. B., aged 29 years, of 81, Cubie-street, who sickened on Sept. 13th, is the wife of a man employed in the sanitary wash-house, whose work consists in the disinfection of and removal of clothing from houses in which cases of plague have occurred. The result has been that we now insist on a bath and change of clothing after using clothing from infected houses. The use of overalls has been a matter of custom for some time, but these evidently do not afford complete protection.

2. A family named M. resided at 57, South Coburg-street. Mrs. M., aged 40 years, sickened on Sept. 16th: Mary M., aged 14 years, on the 13th; Robert M., aged 11 years, on the 15th; and Mrs. Margaret M., a daughter of Mrs. M., aged 20 years, who lived with her mother, on the 14th. All these persons formed one household, in which, as we were informed by neighbours, cases of illness had occurred. We find that these persons had an indirect association with the family T., of 23, Oxford-lane, and that on August 22nd a daughter of the family named Kate, aged 14 years, sickened, and died on the 28th, the cause of her death being certified as "pneumonia." The friends describe her illness as having been accompanied by painful swellings about the neck and arms.

In addition to the above, George H., aged 46 years, a boot top fitter, residing at 248, Mathieson-street, was admitted to the Belvidere Hospital on Sept. 14th, and died on the following day. He had been in association with a case provisionally regarded as ill-defined typhus fever, as explained below, which case, as the result of a post-mortem examination, has now been recognised as due to plague. George H. sickened on Sept. 7th. His illness was associated with sickness in a family named G., living at the same address. Mrs. G. was removed to hospital on Sept. 1st., and died on the 4th of suspected typhus fever, whilst her daughter at the time of her removal was discovered dead in their house. In Mrs. G.'s case the question of plague was considered, and the diagnosis was held in suspense until a post-mortem examination had been made, the result of which was inconclusive.

Since Sept. 19th no case of plague is known to have occurred among the population of Glasgow, the admission to the hospital on the 20th being that of a male patient from Govan who had been sent to one of the general hospitals for treatment for what was regarded as an affection calling for surgical care, and who was thence transferred to the Belvidere Hospital.

The following table continues the record of admissions into the hospital:—

Name.	Address.	Sickened.	Removed to hospital.	Where exposed to infection.
(1) Charles McM.	52, Dale-street.	Sept. 8th	Sept. 9th	Slept on a bed on which a neighbour had died from "pneumonia" on August 28th. Was buried on Sept. 1st.
(2) Rosina M. ...	23, Florence-street.	August 23rd	,, 10th	Worker in a hair factory; no known association with other cases.
(3) Mrs. B	81, Cubie-street.	Sept. 13th	,, 14th	Wife of a clothes-collector in sanitary washhouse.
(4) Ellen R	Belvidere Hospital.	,, 13th	,, 14th	Cleaner in plague ward.
(5) George H. ...	248, Mathieson-street.	,, 7th	,, 14th	See note in text.
(6) Mrs. M.	57, South Coburg-street.	,, 14th	,, 15th	A married daughter of Mrs. M. (No. 9), admitted Sept. 16th.
(7) Mary M. ...	,,	,, 14th	,, 15th	See details in text.
(8) Robert M. ...	,,	,, 14th	,, 16th	,, ,,
(9) Mrs. M.	,,	,, 13th	,, 16th	,, ,,
(10) Mrs. G.	52, Dale-street.	,, 18th	,, 19th	Sister and niece of C. McM. (No. 1). See note below.
(11) Mary G.... ...	,,	,, 18th	,, 19th	
*(12) William W. ...	21, Robert-street, Govan.	,, 1st	,, 20th	—

* Admitted through one of the general hospitals.

In addition to the above five persons were removed to the Belvidere Hospital during the fortnight, presenting symptoms which at the time of their admission gave rise to a suggestion of plague. In three of these cases the further development of the symptoms enabled them to be set aside as definitely not cases of plague, while two cases still remain under observation.

RELATIONSHIP OF CASES.

(1) Charles McM. has no association which can be traced with earlier known cases. A neighbour had died on August 28th from "pneumonia" and was buried on Sept. 1st. After the death the bed on which he had laid was transferred to McM.'s house and was used by McM. and his wife.

(2) Rosina M. sickened on August 23rd, a swelling in the groin being observed by herself on the 26th. She had no regular medical attendance and the nature of her illness was not recognised till Sept. 10th.

Cases in the above table numbered 3 and 6-9 are described on p. 964 (cases 1 and 2).

(4) Ellen R. is a ward-cleaner employed in the plague ward, who, like all the others whose work brings them into contact with these cases, received an injection of 10 cubic centimetres of Yersin's serum. This was on Sept. 3rd, and she sickened on the 13th, her illness being of the mildest possible description. The micro-organism has, however, been recovered from an affected gland.

(5) George H., aged 46 years, is a boot top fitter, residing at 248, Mathieson street. He was admitted into the hospital on Sept. 14th and died on the following day. At the necropsy his death was found to have resulted from plague. He sickened on the 7th. His illness was associated with earlier illnesses in a family (G.) living at the same address. Mrs. G. was removed to hospital on Sept. 1st and died on the 4th from suspected typhus fever, whilst her daughter at the time of her removal was discovered dead in their house. In Mrs G.'s case the question of plague was considered because she was known to have been a visitor at the house of the family B. where the earlier cases occurred, but the diagnosis was held in suspense. At the necropsy the evidence was still held as inconclusive.

(10) Mrs. G. is a sister of patient No. 1 and sickened under observation on Sept. 18th. On the 10th she had been given subcutaneously 10 cubic centimetres of Yersin's serum. She had a mild attack.

(11) Mary G., aged six years, a daughter of patient No. 10, also sickened on Sept. 18th. Because of her age and some passing indisposition an injection of Yersin's serum was not given. Her attack has proved fatal.

Putting these together with the earlier admissions we have now had a total of 27 admissions from definitely recognisable plague, and of these up to the present (Sept. 28th) five have died and 22 remain under treatment, one of these being a patient from the adjoining burgh (Govan).

MILD NATURE OF THE ATTACK IN MANY CASES.

Eight only of the cases coming under treatment in hospital can be classed as severe attacks, and of these five have died. Seven, on the other hand, are of extreme mildness so that save for their association with recognisable cases a suggestion of plague would scarcely have been raised. 12 fall into a middle class, the severity in individual cases ranging between the severe and the mild type just alluded to, but with a tendency to mildness rather than otherwise. With regard to many of the milder forms the question of diagnosis is no easy one. We are familiar in small-pox outbreaks with the extremely modified form which the disease may present in persons fairly well protected by vaccination, and where a definite history of exposure alone affords a means of interpreting aright symptoms which would indeed rarely be critically surveyed were the persons not under observation at the time. We are now learning practically that in a corresponding way plague can become so defaced by mildness in its form of attack that an administrative difficulty of no inconsiderable magnitude is created. Consequently I believe safety lies in disregarding the query which constantly haunts these milder forms and in dealing with the surroundings and associates of the suspect as if no doubt as to the nature of his illness existed.

YERSIN'S SERUM.

Over 60 persons known to have been in association with patients suffering from plague have been immunised by subcutaneous injection of Yersin's serum in doses of 10 cubic centimetres. Of these two have sickened with a very modified form of the disease. Questions of dosage and the method of administration will require consideration in the light of these partial failures. The serum is much more powerful as a curative agent when injected into the veins than when given subcutaneously, and it may be that the full protective value for "contacts" is only to be obtained by a similar selection of site.

DISINFECTION.

To the methods of disinfection formerly described we have now added a final gaseous disinfection of the house with formic aldehyde. When disinfection and cleansing is finished the windows of the house are left open.

In our issue of Sept. 8th we published "A Preliminary Note on the Outbreak of Bubonic Plague in Glasgow," wherein it was mentioned that Dr. Thomas Colvin and another medical man had been the first to see and notify the cases which turned out to be plague. The second medical man was Dr. C. E. Robertson.

THE REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA FOR 1898.

CONCLUDING NOTICE.[1]

BEFORE dismissing altogether the subject of the prevalence of enteric fever among our troops serving in India we may refer to a few of the facts and conclusions set forth in the report under review. In the section devoted to the native army there is a tabular statement which brings out in a very striking way the extremely low ratios of admissions and deaths from this fever among the native troops and jail population respectively as compared with those of European troops. Nor can this difference be attributed to one of diagnosis only, for the total fever mortality in the two armies is very different. Among the European troops 54 per cent. of all deaths in 1898 were from fevers, whereas they were only 16 per cent. among native troops. Seeing then that the death-rate of European troops was so much greater than that of native troops from all kinds of fever it seems to follow that the nature of the fevers cannot be the same in both cases and that native soldiers and prisoners are far less liable to enteric fever than are British soldiers. While there can be no doubt that this fever is water-borne, and that outbreaks of it are very frequently traceable to a contaminated water-supply, there is no reason why this should invariably be the case. At Quetta the disease prevailed with greater virulence in the year under report than in any other Indian station, but the catchment area is described is an ideal one and the water as above suspicion. We notice that Major A. M. Davies, R.A.M.C., whose training as assistant professor of hygiene at Netley specially qualified him for such an investigation, excludes water as a probable cause of the sickness at Quetta and has recourse to the aerial distribution by dust-storms of sewage-derived germs from badly-placed filth trenches as an explanation. It does not follow, of course, that because the presence of Eberth's enteric bacillus was not detected in the water the disease was not spread by its agency. The epidemic at Maidstone is a case in point. Not only have our ideas been greatly enlarged in regard to possible sources of infection, but the long-continued period over which the infection may extend in those who have suffered from an attack, as well as the fact that clinically the mildest cases of enteric fever may be just as virulent as the worst for spreading infection, have all tended to increase our difficulties in tracing out the sources of it.

The study of the scientific differentiation of the fevers of India (whether physical or microbic) from one another is being actively prosecuted and we know already that, in addition to enteric fever and fevers of a malarial type attributable to the malarial parasite, there are now good grounds for believing that Mediterranean (so-called Malta) fever also prevails in India. Still, enough has been said to indicate the state of uncertainty for all practical purposes that exists regarding our knowledge about the causes of the terrible prevalence of enteric fever in India. As Major

[1] The first notice appeared in THE LANCET of Sept. 15th, 1900, p. 832.

Davies remarks, water which has been boiled, if subsequently exposed to contamination by dust, is liable to become a very impure and dangerous water unless great care is taken in its storage. At page 28 of the Sanitary Commissioner's report under review there are some pertinent remarks on the difficulties attending the use of the Chamberland filter on military service owing to the too fragile nature of the bougies.

It must be confessed that any wholesale study, as it were, of the literature in regard to the etiology and causes of enteric fever is rather bewildering than otherwise to the practical sanitarian. The recognition of the bacteriological causes of disease has, no doubt, opened out a vast field and given precision to our investigations. But it has to be borne in mind that it is only when the results of such investigations have become sufficiently well established as to admit of being practically applied that the sanitarian is, officially speaking, warranted in recommending the expenditure of public money for that purpose. As regards preventive medicine it is mainly in the direction of personal protection by inoculation against infectious diseases that the most promising and successful attempts to avert or to eradicate an epidemic or to protect individuals have of late been made. The labours of Mr. Haffkine in regard to inoculation against plague and those of Professor Wright in respect of typhoid fever may be mentioned as among the most recent advances in this direction.

The army of India shared in the comparative immunity from cholera which characterised the year 1898 in India generally. The mortality from abscess of the liver in 1898 was 25 times greater among European than among native soldiers. On the other hand, the admission rate from dysentery among European soldiers was to the ratio of the native soldiers as 1 to 1·5, the relation being the same as in the two preceding years. Some interesting medical points and further particulars in connexion with dysentery and abscess of the liver are detailed at page 64 *et seq.* of the report and the matter was gone into at length in the Sanitary Commissioner's report for 1894. In passing, we are tempted to inquire into the causes of these differences and whether the relative insusceptibility of the native to abscess of the liver can be attributable to differences of diet—such as the absence of alcoholic drinks and animal food in the case of the native of India.

As regards the prevalence of venereal disease in the army serving in India we are glad to notice that there was a decrease in the admission rate. Touching the diseases of the jail population, the predominant causes of jail mortality are bowel complaints, respiratory diseases, and tubercle of the lungs. Bowel complaints are very common and cause a very large mortality. As the Sanitary Commissioner remarks: "There would be little exaggeration in saying that the prevention of these complaints is the beginning and end of jail hygiene, as it certainly is the most difficult of the problems the jail medical officer has to face." The Sanitary Commissioner, comparing the rates of mortality of the different classes one with another, sums up the comparison as follows: The chief cause of deaths among European troops was fever, among native troops respiratory diseases, and among prisoners bowel complaints.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 33 of the largest English towns 6358 births and 4041 deaths were registered during the week ending Sept. 22nd. The annual rate of mortality in these towns, which had declined from 21·7 to 18·2 per 1000 in the three preceding weeks, further fell last week to 18·1. In London the death-rate was 18·5 per 1000, while it averaged 19·2 in the 32 provincial towns. The lowest death-rates in these towns were 11·5 in Croydon, 12·3 in Bradford, 12·4 in Halifax, and 13·2 in Cardiff; the highest rates were 23·5 in Brighton, 23·8 in Hull, 24·3 in Salford, and 25·5 in Blackburn, in Sheffield, and in Sunderland. The 4041 deaths in these towns included 771 which were referred to the principal zymotic diseases, against 1422, 1143, and 879 in the three preceding weeks; of these 497 resulted from diarrhœa, 105 from whooping-cough, 72 from diphtheria, 50 from "fever" (principally enteric), 26 from measles, and 21 from scarlet fever. No death from any of these diseases occurred last week in Halifax; in the other towns they caused the lowest death-rates in Croydon, Birkenhead, Huddersfield, and Bradford; and the highest rates in Preston, Sheffield, Hull, and Gateshead. The greatest mortality from measles occurred in Swansea; from scarlet fever in Sunderland; from whooping-cough in Nottingham, Blackburn, and Gateshead; from "fever" in Bolton and Portsmouth; and from diarrhœa in Wolverhampton, Preston, Sheffield, Hull, and Gateshead. The 72 deaths from diphtheria included 30 in London, nine in Leicester, and seven in Sheffield. No fatal case of small-pox was registered last week in any of the 33 towns; and only two small-pox patients were under treatment on Saturday last, Sept. 22nd, in the Metropolitan Asylums Hospitals. The number of scarlet fever patients in these hospitals and in the London Fever Hospital at the end of the week was 1804, against 1702, 1736, and 1753 on the three preceding Saturdays; 269 new cases were admitted during the week, against 176, 213, and 243 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 124 and 161 in the two preceding weeks, further rose last week to 203, and were 30 above the corrected average. The causes of 40, or 1·0 per cent., of the deaths in the 33 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Bristol, Nottingham, Salford, Newcastle, and in 14 other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Liverpool, Manchester, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 17·5 and 18·9 per 1000 in the two preceding weeks, was again 18·9 during the week ending Sept. 22nd, and was 0·8 per 1000 above the mean rate during the same period in the 33 large English towns. The rates in the eight Scotch towns ranged from 16·6 in Leith and 16·9 in Perth to 20·1 in Aberdeen and 22·3 in Greenock. The 584 deaths in these towns included 62 which were referred to diarrhœa, 20 to whooping-cough, 11 to diphtheria, seven to "fever" (including one fatal case of bubonic plague), five to measles, four to scarlet fever, and three to small-pox. In all 112 deaths resulted from these principal zymotic diseases, against 83 and 98 in the two preceding weeks. These 112 deaths were equal to an annual rate of 3·6 per 1000, which was slightly above the mean rate last week from the same diseases in the 33 large English towns. The fatal cases of diarrhœa, which had been 42 and 54 in the two preceding weeks, further rose last week to 62 of which 26 occurred in Glasgow, 11 in Edinburgh, nine in Aberdeen, and seven in Dundee. The deaths from whooping-cough, which had been 21 in each of the two preceding weeks, declined to 20 last week and included 16 in Glasgow. The fatal cases of diphtheria, which had been three, five, and six in the three preceding weeks, further rose last week to 11, of which three were registered in Edinburgh, three in Paisley, two in Dundee, and two in Greenock. The deaths referred to different forms of "fever," which had been four and seven in the two preceding weeks, were again seven last week and included three in Paisley and three (one of which was a death from bubonic plague), in Glasgow. The fatal cases of measles, which had decreased from 16 to two in the five preceding weeks, rose again last week to five, of which two occurred in Glasgow and two in Edinburgh. The deaths from scarlet fever, which had been four and seven in the two preceding weeks, declined again to four last week, and included three in Glasgow, where the three fatal cases of small-pox were also registered. The deaths referred to diseases of the respiratory organs in these towns, which had been 79 and 70 in the two preceding weeks, rose again last week to 101, and showed an excess of 37 over the number in the corresponding period of last year. The causes of 26, or more than 4 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 22·2 and 24·8 per 1000 in the two preceding weeks, declined again to 24·5 during the week ending Sept. 22nd. During the past four weeks the death-rate in the city has averaged 24·6 per 1000, the rates during the same period being 17·9 in London and

17·1 in Edinburgh. The 164 deaths belonging to Dublin registered during the week under notice were only two less than the number in the preceding week, and included 31 which were referred to the principal zymotic diseases, against 26 and 44 in the two preceding weeks; of these 24 resulted from diarrhœa, three from whooping-cough, three from "fever," one from diphtheria, and not one either from small-pox, measles, or scarlet fever. These 31 deaths were equal to an annual rate of 4·6 per 1000, the zymotic death-rate during the same period being 2·7 in London and 3·1 in Edinburgh. The fatal cases of diarrhœa, which had been 32, 20, and 27 in the three preceding weeks, declined again to 24 last week. The deaths from whooping-cough, which had increased from four to seven in the three preceding weeks, declined again last week to three. The deaths referred to different forms of "fever" showed a decline of four from the number in the preceding week. The 164 deaths in Dublin last week included 43 of infants under one year of age and 35 of persons aged upwards of 60 years; the deaths of infants showed a decline, while those of elderly persons exceeded the number in the preceding week. Three inquest cases and four deaths from violence were registered, and 40, or nearly one-fourth, of the deaths occurred in public institutions. The causes of 11, or nearly 7 per cent., of the deaths in the city last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeon Charles James to the Cape of Good Hope Hospital. Surgeon E. T. P. Eames to the *Sans Pareil*.

ROYAL ARMY MEDICAL CORPS.

The Secretary of State for War has offered nominations to the Royal Army Medical Corps to the following universities, colleges, and medical schools:—University of Aberdeen; University of Durham; University of Edinburgh; University of Glasgow; Catholic University of Ireland; the Mason University; Trinity College, Dublin; Queen's College, Cork; Queen's College, Belfast; Yorkshire College, Leeds; University College, London; King's College, London; Royal College of Surgeons in Ireland; St. Bartholomew's Hospital, London; St. Mary's Hospital, London; and St. Thomas's Hospital, London.

VOLUNTEER CORPS.

Royal Engineers: 1st Durham: Surgeon-Captain F. W. Gibbon to be Surgeon-Major. *Rifle:* 3rd Volunteer Battalion the East Surrey Regiment: Surgeon-Lieutenant-Colonel W. A. F. Bateman resigns his commission, with permission to retain his rank and to wear the uniform of the battalion on retirement. 2nd Volunteer Battalion the Welsh Regiment: Surgeon-Major J. H. Davies resigns his commission, with permission to retain his rank and to wear the uniform of the battalion on retirement. 2nd Volunteer Battalion the King's (Shropshire Light Infantry): Surgeon-Major C. H. Gwynn to be Surgeon-Lieutenant-Colonel. 3rd London: The undermentioned officers resign their commissions:—Surgeon-Captain W. M. Abbot-Anderson and Surgeon-Lieutenant R. Fenner.

TRANSVAAL WAR NOTES.

The following officers of the Royal Army Medical Corps have been discharged from hospital for duty:—Lieutenant S. G. Butler, Lieutenant H. F. Hart, Major H. D. James, and Captain G. A. T. Bray.

SOME OF THE LESSONS OF WAR.

There is very little doubt that the experience acquired in South Africa, China, and in West Africa during the Ashanti campaign, will lead to many changes and modifications in the clothing and equipment of the army. If we may judge from the accounts received from China, where there has been an unusual opportunity of comparing the clothing and equipment of troops of the allied forces one with another, the khaki clothing of British troops is, on the whole, the best adapted for service in war. The reports at the end of the campaign in China should contain a large amount of useful and instructive information on a variety of practical points relating, among other things, to army hygiene and the field medical systems and arrangements followed by the armies of Russia, Germany, France, and Japan.

There is one thing to be feared perhaps, as a possible result of our campaign in South Africa, and that is that reforms and changes may be recommended which would be admirably adapted for fighting with the Boers in their own country but not by any means so well adapted for fighting elsewhere with trained and disciplined troops moving together on recognised military methods and in accordance with those strategical and tactical systems of scientific warfare which are recognised and followed by continental armies.

ARMY MEDICAL SCHOOL, NETLEY.

The eighty-first winter session of the Army Medical School will commence on Monday, Oct. 1st. The session will be attended by 23 surgeons-on-probation who have gained entrance to the school by examination—nine for the Royal Army Medical Corps and 14 for the Indian Medical Service. The following is a list of the surgeons-on-probation who are entering the Army Medical School by examination:—

ROYAL ARMY MEDICAL CORPS.

1. H. J. McGrigor.
2. W. R. S. Goodwin.
3. J. H. Brunskill.
4. A. C. Duffey.
5. A. W. Gibson.
6. C. D. Myles.
7. R. N. Hunt.
8. H. E. Howley.
9. R. F. M. Fawcett.

INDIAN MEDICAL SERVICE.

1. C. W. Melville.
2. N. S. Wells.
3. R. McCarrison.
4. J. Masson.
5. W. Anderson.
6. W. D. Pringle.
7. R. H. B. Stanley.
8. W. H. Leonard.
9. J. G. G. Swan.
10. R. McL. Dalziel.
11. A. W. C. Young.
12. J. J. Robb.
13. S. A. Ruzzak.
14. R. B. B. Foster.

THE BLANE GOLD MEDAL.

The Blane gold medals for medical officers of the Royal Navy have just been awarded to the undermentioned officers—viz., Staff Surgeon J. Macdonald Rogers, of H.M.S. *Terror*, and Surgeon Oswald Rees, Royal Marine Light Infantry, Walmer.

DEATHS IN THE SERVICES.

Lieutenant-Colonel Michael Richard Ryan, Royal Army Medical Corps, aged 48 years, at Hong Kong on the 23rd ult. He joined the army in 1877 and reached the rank of Lieutenant-Colonel in 1897. He served in the Afghan war, 1878–70, including the advance through the Khyber Pass and capture of Ali Musjid (medal), and in the Egyptian war, 1882, including the battle of Tel-el-Kebir (medal with clasp and bronze star).

Correspondence.

"Audi alteram partem."

PARISH MEDICAL OFFICERS IN THE HIGHLANDS AND ISLANDS.

To the Editors of THE LANCET.

SIRS,—Now that the reply of the Local Government Board to our memorial for assistance from our parish councils to get an annual holiday has been received it seems to me an opportune time to expose the unfair and defective conditions under which we parish medical officers labour. I have been hoping the matter would be taken up by a more capable man than myself, but apparently no one will take the initiative. Having been a Poor-law medical officer for over 10 years, during which time my absence from the parish on holidays has reached the magnificent aggregate of six weeks (the parish minister's annual holiday), I feel a certain qualification for undertaking my self-imposed task. Our inability to get a much-needed holiday arises from two causes—want of money and the excessive fees charged by locum-tenents, fees which wealthy practitioners in the south can easily pay but which are quite beyond our slender means.

If we look into the matter we find that these Highland and island parishes are composed of very poor people from whom it is impossible for us to gain an income at all commensurate with our hard work and grave responsibilities, let alone make provision for old age, hence a retaining fee is needed to get us to reside in the parish. This retaining fee is simply a small salary given for attending and supplying medicines to paupers, fixed upon by a narrow-minded parish council

sanctioned by the Local Government Board, totally ignorant of the merits of the case and the onerous duties we have to undertake. Such salaries are the lowest possible sums of money offered to get a medical man to reside in the parish and out of all proportion to our parochial duties. This may seem strong language, but the time has surely come when reformation is needed in the relations existing between Poor-law medical officers, parish councils, and the Local Government Board. Improvement in our condition will only come to us by persistent, honest, and powerful combination among ourselves to a man, and I still have such belief in the profession generally that it will back us up. I know that several if not all the eminent men of our profession who have influence at headquarters will support our cause and work for us. I have been told that our parochial salaries are sufficient for attending the paupers. I say that the salaries given are nothing of the kind in order to allow us to do justice to them without being out of pocket. These poor wretches are scattered all over the parish, in many cases at great distances from our residence, and it is impossible for us to give them the medical attention they ought to receive without an enormous expenditure of time spent in travelling. Further, what about the number of poor people bordering on pauperism, often residing at long distances from us, whom we are obliged to visit and supply with medicines and never receive a penny for our services? The parish councils will not pay us, yet they require us to visit the different districts periodically so that poor people may have the advantage of our services on the cheapest possible scale. This is part of our work as the parish servant, yet our salary is only for attendance on paupers. This extra work we are compelled by common humanity to undertake, yet we never receive a penny extra from the funds of the parish. We are bound to become philanthropists and cannot help ourselves. I would here emphasise the distinction between being practically forced to give our services for nothing in very many cases and doing the same at our own discretion. When much sickness is prevalent our consulting-rooms become general dispensaries.

If we require an assistant in an operation on a pauper we have to pay him out of our own pockets. Is such a condition of things fair to us? Parish councils have no right to expect us to be Dr. MacLures. My contention is this—if the Local Government Board insist that these poor parishes have the luxury of a resident medical officer (ostensibly to attend paupers, of course) they should also insist that he is paid a sufficiently remunerative salary for his hard work and valuable services. It is absurd to expect that parish councils will take notice of the above facts if they can possibly evade them. Parish councils can easily afford to double or treble their contributions to our salaries (in many cases only about 10*s.* 6*d.* a week), and the Government could do the same, thus making the pay somewhat consonant with the work done. At present our position is that of a parish slave bound to attend all and sundry in all weathers, night and day, whether we are paid or not.

Again, we are absolutely at the mercy of these parish councils, frequently composed of local men, partially educated, and without that breadth of mind desirable in a body having power over men educated and brought up in a different sphere to themselves. They can turn us away without assigning a reason and the Local Government Board, bound hand and foot by red tape, tell us they cannot help us unless an Act of Parliament is altered. The sooner such one-sided Acts of Parliament are altered the better. I would ask that the Local Government Board have absolute control over us as to salaries, holidays, tenure of office, and payment for extra services. Were our position thus recognised and protected by Government it would give us a standing in the eyes of the public and an independence we cannot now enjoy. Further, we are expected and would really need to be *au fait* with every branch of our profession and keep ourselves supplied with up-to-date instruments which may never be needed for years. Yet how can we do so out of the slender hand-to-mouth incomes we are able to derive from these poor out-of-the-way parishes? We cannot attend post-graduate lectures, visit hospitals, study in anatomical museums, take in medical literature, and generally keep ourselves up to date like our brothers in the south. All these advantages are denied us on account of our isolated position, and we get rustier day by day and year by year. A minimum annual holiday of a month or six weeks would materially strengthen us professionally, physically, and mentally, and, in the words of the Local Government Board, "it would be to the advantage of the public" whom we serve.

We cannot meet to discuss what combined action may be taken, so I would request all parish medical officers who approve of my statements and have suggestions to offer to communicate with me. My proposal is to draw up a petition signed by every Poor-law medical officer in the Highlands and islands, have it printed, and copies sent to the Local Government Board, the General Medical Council, all the branches of the British Medical Association, every Cabinet Minister, and those Members of Parliament who are likely to support our claims, and I feel sure of a mitigation of our present condition, if not absolute success in our appeal. I feel I have only touched the fringe of the question in a very imperfect way, yet if I have aroused my colleagues to agitate in a business-like manner for better conditions all round I shall feel satisfied in the meantime.

I am, Sirs, yours faithfully,
HENRY PEARSON TAYLOR, M.B., C.M. Aberd.

Reafirth, Mid Yell, Shetland, Sept. 16th, 1900.

"THE PRESENT POSITION OF PATHOLOGY IN ENGLAND."

To the Editors of THE LANCET.

SIRS,—I have read with great interest the letters by Dr. Powell White and Dr. F. Bushnell on the above subject which have recently appeared in THE LANCET and can cordially endorse all that they say. Pathology seems still to be regarded by many as a subject of merely scholastic importance, and practical pathology as an aid in diagnosis as work to be undertaken with confidence by anyone who can stain a section and look down a microscope; experience and thought are not required. The remuneration offered, therefore, is merely that of a mechanic. With regard to the work done by research societies in pathology I have come to the conclusion, after considerable experience, that the fee charged is in many cases not in excess of the value of the opinion given but rather the reverse.

I am, Sirs, yours faithfully,
York, Sept. 24th, 1900. P. J. CAMMIDGE.

"PROFESSIONAL ORGANISATIONS."

To the Editors of THE LANCET.

SIRS,—"Magna est veritas" is my apology for this, positively my final, contribution on the subject of "Professional Organisations." It is absolutely untrue that I refuse to waive the fee in consultations with institute surgeons. The letters forwarded by Mr. Wyllys state, in language lucid enough for an infant school, my consent to any pecuniary conditions the committee think fit to impose, and my rejected resolution ignores fees altogether.

To Mr. Wyllys's question let me reply that never having been honoured with one-fifth of the club practice formerly enjoyed by him my feelings of reprobation are proportionately less acute. If the institute medical officers—after the lapse of years—still merit the reprobation on which Mr. Wyllys is so keen I would suggest that, at any rate, reprobation should fall short of vindictiveness. Moreover, it is impossible to injure the institute surgeon without at the same time injuring the institute patient by interposing obstacles to the quest for assistance until, maybe, it is too late.

Kindly permit me to quote a few words, facts, and inferences.

Words.—Mr. Wyllys states: 1. "In any really urgent case we are individually prepared to meet them (i.e., the institute doctors) when called upon to do so." 2. "We are, and always have been, prepared to give immediate help if called upon to the institute surgeon in cases of grave and sudden emergency."

Facts.—1. If the pleonasm "really" is omitted from Mr. Wyllys's first statement it is synonymous with my own proposition, yet the proposition is rejected. 2. No records exist of either of the statements being acted upon. 3. There is no denial that help from an institute surgeon has been accepted.

Inferences.—1. Cases of "real" urgency or "sudden and grave emergency" do not happen among institute patients. 2. If the latter have only ordinary chronic diseases, such as Bright's disease or diabetes, bronchitis or fibroid phthisis, they are not eligible for consultation while attended by the

institute surgeon. And this is common humanity. 3. Mr. Wyllys's statements are satisfactory as evidences of an awakening conscience.

It was very kind of Mr. Wyllys to postpone boycotting me yet a little longer. I am irresistibly reminded of the "Jackdaw of Rheims"—

> "Never was heard such a terrible curse.
> But what gave rise
> To no little surprise,
> Nobody seemed one penny the worse."

I will only add, Sirs, that when the wise medicine men of Yarmouth—mustering at an annual meeting six all told—have their sapient laws checked by a central authoritative body, then, and not till then, will I submit my sense of what is right and what is wrong to their infallible jurisdiction.

I am, Sirs, yours faithfully,

Great Yarmouth, Sept. 23rd, 1900. JAMES RYLEY, M.D. Lond.

THE DETECTION OF LACTIC ACID.

To the Editors of THE LANCET.

SIRS,—I have read with much interest Dr. Shufflebotham's valuable contribution on "The Chemical Examination of Gastric Contents" in THE LANCET of Sept. 15th, and being interested more in the chemistry than the pathology of the question I beg to offer a remark on one point which seems to me to be not quite clearly expressed. I refer to the description of the application of Uffelmann's test for lactic acid, and in view of the great importance of this test as an aid in diagnosis Dr. Shufflebotham will pardon me for drawing attention to the passage. The test is thus described. Uffelmann's reagent "consists of 10 cubic centimetres of a 5 per cent. carbolic acid solution and 20 cubic centimetres of distilled water. To this is added one or two drops of solution of perchloride of iron and an amethyst blue colouration is obtained. The solution should be prepared fresh each time as it does not keep. In the presence of lactic acid the blue colouration is changed to yellow. ..... Hydrochloric acid has no effect on this reagent." This last statement is the point to which I take exception and which if not corrected may be the means of vitiating the results obtained by the application of the test. The purple blue colouration produced by the action of ferric chloride on phenol is familiar to every chemist, and it is equally well known that the colouration is only produced in neutral or slightly alkaline solutions. It is not developed if there is the slightest excess of acid, and when developed in a neutral solution it is entirely discharged by the addition of acid. So far, therefore, from hydrochloric acid having "no effect" the very reverse is the case, as the reagent is useless in the presence of free hydrochloric acid. It may be replied that the reference is restricted to the use of the reagent in testing gastric contents in which the percentage of free hydrochloric acid is usually very small, and while it is quite within the bounds of possibility that the proportion of free acid may be so minute as not appreciably to effect the result it is not safe to trust to this being the case without careful experimental evidence. Taking the percentages of lactic acid and hydrochloric acid found in a number of the cases quoted by Dr. Shufflebotham—namely, 0·05 per cent. and 0·02 per cent. respectively—I find that while a solution containing the former strength, 0·05 per cent. lactic acid, gives with the reagent a brilliant yellow colouration, the colour is scarcely perceptible in a solution containing 0·05 per cent. lactic acid and 0·2 per cent. hydrochloric acid, and quite imperceptible if the proportion of hydrochloric acid be very slightly increased or that of the lactic acid decreased. From these facts it is obvious that the test cannot be relied on when applied simply by adding the reagent to the gastric contents filtrate unless it has been previously ascertained by the phloroglucin test that free hydrochloric acid is entirely absent, a condition which rarely, if ever, occurs. The proper course to follow is to separate the organic acid by Berthelot's ether process, as described by Dr. Shufflebotham, and then to apply the test.

In place of Uffelmann's reagent I recommend one that is quite as satisfactory and much more convenient for use. It is prepared by dissolving four grains of sulphocarbolate of zinc and two grains of ferric chloride in half an ounce of distilled water. The colour is not blue, as with carbolic acid, but dark ruby, and the reaction is exceedingly delicate, so much so that 1 part of lactic acid in 100,000 can quite readily be detected by using a full six-inch test-tube and looking down through it on a white surface. The advantage of this reagent is the convenience with which it can be prepared and the certainty that it will never vary in depth of colour. I would suggest that medical men would find it particularly handy to have the reagent in tablet form. Using perfectly dry ferric chloride the two salts can quite well be mixed and if preserved from moisture there is no reason why a compound tablet so prepared should not keep indefinitely. I am, Sirs, yours faithfully,

Glasgow, Sept. 24th, 1900. THOMAS MABEN, F.C.S.

"THE TREATMENT OF ACUTE ALCOHOLISM BY LARGE DOSES OF DIGITALIS."

To the Editors of THE LANCET.

SIRS,—With reference to the above I would like to point out that in Nelligan's Materia Medica and Therapeutics, edited by Macnamara, 1868 (Dublin), will be found, under the heading of Digitalis, that Jones of Jersey gave large doses of the tincture to his patients who were suffering from delirium tremens with very beneficial results. I believe the first heroic doses were given quite in error through the dispenser mistaking half-drachm for half-ounce doses, so it will be seen that the treatment is by no means of recent origin. I am, Sirs, yours faithfully,

EDWARD C. CLANCHY.

Battersea-park-road, S.W., Sept. 24th, 1900.

"THE PREVENTION OF DISEASE IN THE FIELD."

To the Editors of THE LANCET.

SIRS,—May I briefly reply to some difficulties you have suggested to my proposition that on active service all water used for drinking purposes should be boiled or filtered?

1. You "would urge Dr. Canney to put forward his proposals for the consideration of those more immediately concerned with the question which he has taken up." I cannot help thinking that those most "immediately concerned" are not the War Office but the whole public who are watching their relatives through this anxious struggle. If the public make it a *sine quâ non* that no general can come back with credit from a campaign with a heavy list of casualties from preventable diseases all "difficulties" in the way of prevention will rapidly fade away. Men do not mind facing fair war, but for thousands to have to go through (and too often, alas, not get through) typhoid fever and dysentery—both preventable filth diseases—with scant attention and nursing and often terrible feeding is too cruel to be tolerated. Seeing that men have had to drink infected water almost everywhere in South Africa it would appear that if there are any others more "immediately concerned" in protecting the army from destruction they must have encountered obstacles and difficulties at the hands of other War Office departments, such as you probably refer to as the "practical difficulties in the way of it being carried out."

2. Flies and dust as carriers of typhoid bacilli. I think very few bacteriologists would uphold the latter agency. Both agencies would require to find the bacilli first before they could carry them. My proposition was to keep the army free from typhoid fever (and largely from dysentery) from the first day of landing. There would then be no dejecta from which the bacilli could be obtained (any suspicious case being treated as typhoid fever, as regards dejecta, antiseptically). Seeing that every man probably in South Africa has been exposed to infected water or utensils it seems unnecessary to assume "dust and flies" without absolute proof. This theory would militate against any proposed plan for abolishing typhoid fever and dysentery as mainly water-borne diseases.

3. "*It has not been the experience of medical officers in India and elsewhere that immunity from disease can be guaranteed by the use of boiled water or of filters.*" This would be a most serious objection if the medical officers had shown at the same time that no other water had been used in the bazaars or elsewhere outside the barracks, that all milk had been boiled, that utensils had not been washed in infected water, and that the toilet water and water used for salads, &c., had been boiled. If any of these things had been left undone no weight would be attached in this country by any bacteriologist to the Indian medical officer's statement.

4. Thirst. The extra half hour (with present machines) is doubtless a difficulty. The occasions would be very rare with a smart "water corps," as smart as the Royal Artillery, that the men would not with education wait the time. Further, a smart "water corps" could perhaps obviate a man arriving in the desperately thirsty condition. Wilful disobedience could be met in other ways.

5. Transport. I have shown that 500 mules would have carried the boiling machines (one per 100 men) and fuel (petroleum) for 10 days, sufficient to boil four pints per man per day for the whole of Lord Roberts's army of 50,000 men moving from the Modder to Bloemfontein. If the mules had been killed *en route* the position would not have been worse than without the attempt; if, on the other hand, the "water corps" had got them along safely there would have been practically no suffering, from 15,000 to 20,000 less to treat at Bloemfontein and Kronstad for weary months under heartrending difficulties. In this scheme I have suggested as transport pack mules, thus disposing of "single lines of railways," roads, and other "difficulties." From the outset the transport of a "water corps" would be sacred. No general could touch it for any purpose whatsoever. It is obvious that no general or transport officer will accept the additional transports with pleasure, but if there is no better scheme in the field there must be no escape.

6. With regard to the difficulty of knowing when the water may be contaminated I have assumed that all water in war is contaminated as the only safe hypothesis.

I am, Sirs, yours faithfully,

Sept. 24th. LEIGH CANNEY.

RHEUMATISM AND TONSILLITIS.

To the Editors of THE LANCET.

SIRS,—I trust you will permit, and that Dr. Poynton and Dr. Paine will pardon, my claim—quoting the opinion of another—to be "the first to emphasise the etiological, semeiological, and therapeutic analogy between tonsillar inflammations and the arthritic diathesis." My views on the close relations of rheumatism and tonsillitis are recorded in the first edition of my work "The Throat and its Diseases," published in May, 1878, and treatment of tonsillitis by salicylate of soda—then a new remedy—was first recommended. At the meeting of the British Medical Association at Leeds in 1889 Dr. Archibald Garrod, while conceding me British priority amongst the "moderns," mentioned Stoll (1777) as the first writer to speak of rheumatic angina, but on that occasion I was able to cite still earlier authors—viz.: Sauvage (1771), Balls (1762), and Musgrave (1710). I also on the same occasion quoted from a letter I had received from Sir Andrew Clark in which he said: "If one will think merely of the rapidity with which the tonsil manufactures and discharges lymph cells it will not be difficult to see how a sudden suppression of this process, the accumulation of effete matters in the crypts, and the filling of the lymph spaces with products of bacteria life, and with matters undergoing evolution, may contaminate the blood and originate the troubles considered as rheumatic." I was at once ready to accept this interpretation which at that time represented a decidedly advanced view. Since that date this contamination of the system, or blood-poisoning, has been acknowledged to be of microbic origin by several observers. In the fifth edition of my book the subject of tonsillitis has been treated from the bacteriological point of view, and I have tabulated the micro-organisms found in 100 cases of tonsillitis by our hospital bacteriologist, Mr. St. George Reid.

Without going into detail it may be stated that various forms of staphylococcus, either alone or associated with other organisms, were found in 62 cases, streptococcus in 58 cases, and diplococcus in 32 cases. With respect to this last named organism I have pointed out in my monograph on "Diphtheria and its Associates" (p. 48) that diphtherial "throats in which diplococci are predominant are 'dirty' in character and the pseudo-membrane slow to clear away."

In the article under consideration it is mentioned that a diplococcus found in acute rheumatism has a disposition to grow in culture as a streptococcus, and in most of the photo-micrographic illustrations of diplococci in my book the organism is associated with streptococci. In one case (No. 22, p. 131) which presented certain aspects of diphtheria, but which was really one of acute lacunar tonsillitis, the diplococcus was found in almost pure culture. Of course, I make no claim to originality in these observations, and, indeed, I have endeavoured to give full credit to other workers, continental, British, and transatlantic, in the same field. I only now draw attention to them as in some sense confirmatory of the much more elaborate and complete investigations of Dr. Poynton and Dr. Paine.

I am, Sirs, yours faithfully,

Mansfield-street, W., Sept. 24th, 1900. LENNOX BROWNE.

"POISONING BY CARBON MONOXIDE."

To the Editors of THE LANCET.

SIRS,—Some years ago I used to see an "ironer" who was the subject of attacks of vertigo, headache, and visual hallucinations when she awoke in the morning, but no amnesia or sickness. She was always worse after "glossing" and during drying. She stated that many other women in the trade suffered from headache, &c., but that they usually attributed it to the "heat." May I add one or two other references to those given by Dr. Elgood in his very interesting paper in THE LANCET of Sept. 15th (p. 805)? Ruata[1] recorded a case of active delirium lasting for five days after exposure to the fumes of a coke stove in a close room. Voss[2] reported an instance of poisoning of five in a family with two fatal results. One of the fatal cases had well-marked convulsions and tetany-form spasms. Régis[3] points out that in the acute forms of poisoning a very prominent symptom is retrograde amnesia. He has also observed rapid and incurable dementia follow in prolonged chronic or professional toxæmia in ironers, whose previous symptoms included vertigo, mental obtusion, hallucinations, and even delirious conceptions.

I am, Sirs, yours faithfully,

Sept. 24th. J. CHRISTIAN SIMPSON, M.D. Edin.

"LODGE PRACTICE IN BRITISH COLUMBIA."

To the Editors of THE LANCET.

SIRS,—Your Canada correspondent in THE LANCET of Sept. 22nd (p. 911) falls into an error when he says that "not a single medical man throughout the Dominion of Canada made any response whatever to this appeal." No one is allowed to practise in British Columbia whatever qualifications he may possess until he passes an examination in anatomy, chemistry, physiology, pathology, materia medica, medical jurisprudence, theory and practice of medicine, surgery, clinical medicine, clinical surgery, obstetrics and diseases of women and children, in addition to paying $100. The same applies to Ontario and Manitoba. With a British qualification one can practise in the North-west Territories on payment of $50. Hoping this may be of service to anyone going out to settle in Canada,

I remain, Sirs, yours faithfully,

PIERS J. HATTON, M.B., C.M. Edin., &c.

Manchester-street, W., Sept. 24th, 1900.

THE GENERAL ELECTION AND THE MEDICAL ACTS.

To the Editors of THE LANCET.

SIRS,—The Accrington and District Medical Society have taken the opportunity given by the General Election to send a deputation to both the candidates before the constituency asking them to pledge themselves to support any amendment of the Medical Acts which may be brought forward by the General Medical Council or the British Medical Association, especially with a view to registration being the sole right to practise medicine, surgery, or any of their branches. The society further suggests that the medical societies in every electoral district should immediately take similar steps.

I am, Sirs, yours faithfully,

ELWIN H. T. NASH, M.R.C.S. Eng., L.R.C.P. Lond.,

Accrington, Sept. 26th, 1900. Honorary Secretary.

*** A telegram received as we go to press states: "Both candidates absolutely agree with proposals of deputation."—ED. L.

[1] Gazzetta Medica di Torino, No. 24, 1892.
[2] Deutsche Medicinische Wochenschrift, Oct. 6th, 1892.
[3] Practical Manual of Mental Medicine.

THE FIELD SERVICE MANUAL, ROYAL ARMY MEDICAL CORPS.

To the Editors of THE LANCET.

SIRS,—There is the greatest possible need of a really good "Field Service Manual" for the Royal Army Medical Corps. The present little pamphlet is a thoroughly bad book and of no use for its purpose. The French army have a field service book of regulations of considerable size, well illustrated, and a complete help to all concerned; our booklet is valueless and unworthy of the army. The Indian Army Field Service Manual is a practical and useful book. I wish ours was even one quarter as good. Unfortunately it is not. I am, Sirs, yours faithfully,

Sept. 24th. RE-MODEL A USELESS BOOK.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The Increase of the Plague Epidemic but the Decline of Famine and Cholera.—The Anti-typhoid Inoculations in India Last Year; Favourable Results.—A New Theory for Beri-beri.

THE deaths from plague throughout India are still mounting up. For last week the number was 691—an increase of 62 on the previous seven days. In the middle of July it was only 198, so the development has been somewhat rapid. The recent increase is chiefly in the Mysore State and in the Bombay districts. Mysore city shows a sharp attack and Poona once again shows a serious increase of the disease. During the past month 141 deaths have occurred in the latter city—the increase being especially marked during the past fortnight. It will be remembered that it was at this season that the terrible outbreak occurred last year. The authorities have issued a notice for certain of the inhabitants to vacate their houses within four days and stay in the health camp. Dead rats have been found lately in many places. The new regulations are being tried. Affected places are disinfected, but segregation has been done away with and there is no compulsory inspection. In Bombay and Calcutta the amount of plague continues about the same, Calcutta reporting 85 deaths and Bombay city 49. The figures for Calcutta include "suspected" deaths. The general mortality in Bombay city is decreasing and for last week 1224 deaths were reported. As, however, the cholera and plague returns only account for 234 deaths and the average mortality is under 600 there is still a balance of about 400 deaths unexplained. The death-rate is over 77 per 1000 per annum. Famine and cholera are fortunately on the decrease. The last famine figures show less than 5,000,000 under relief, but there are still no less than 3,054,000 under gratuitous relief. Cholera is decreasing nearly everywhere.

With reference to the anti-typhoid inoculations in India last year the *Indian Medical Gazette* publishes some important figures. There were 1312 cases of typhoid fever amongst the British troops with 348 deaths, a death-rate of over 25 per cent. The ratio of admissions to total strength was 20·6 per 1000. There were 4502 inoculations, and amongst these men there were only nine deaths from typhoid fever. This gives 0·2 per cent. of strength. There were 44 admissions, giving 0·98 per cent. of strength. Amongst the non-inoculated in the same corps and at the same stations, of 25,851 men there were 657 cases and 146 deaths, giving the relative percentages of admissions and deaths as 2·54 and 0·56. This is strongly in favour of inoculation. I do not quite understand, however, why the admission-rate among the non-inoculated should be 2·54 per cent., whereas the ratio of total admissions to total strength of British troops was only 2·06 per cent. It is at least satisfactory to see so great a benefit, more especially when it is concurrent with a fall in the admission-rate for enteric fever in 1899 from 36 in 1898 to 20 per 1000 in 1899. The above figures are for the whole year and include a much larger number of men inoculated than were referred to in Professor Wright's recent article.

A theory has recently been put forward that beri-beri is due to the consumption of mouldy rice. This, of course, is not the first time that the disease has been connected with some kind of food. Its rapid disappearance from the Japanese Navy may have been due to better dietary, but, on the other hand, mere absence of nitrogenous food does not produce any condition approaching this disease. The chief argument against the mouldy rice theory is that the disease is known to have broken out amongst communities in which the food was generous and varied and in which rice formed but a very small proportion of the diet. Moreover, fungoid growths do not withstand the heat necessary for cooking rice.

Sept. 6th.

THE TENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

(FROM OUR SPECIAL CORRESPONDENT.)

THE WORK OF THE SECTIONS—(*Conclusion*).

THE BACTERIAL TREATMENT OF SEWAGE.

ON the last morning of the Congress, Friday, August 17th, the interest in the Third Section, which was beginning to flag, was vigorously revived by Mr. S. H. ADAMS of York. He gave a brief summary of his report on the bacterial treatment of sewage, but he had provided himself with a lantern and showed photographs on the screen of the various types of bacteria beds employed in England. Dealing first with the experiments made by Mr. Dibdin upon the one-acre filter at Barking, he explained that it lost its capacity and was gradually choked up when worked continuously. On the other hand, when worked intermittently it retained its purifying capacities. He then instanced the Sutton beds as an example of double treatment and the Hampton beds as an example of triple treatment. The automatic apparatus designed by himself for working such filtering-beds was shown with views of the sludge in movement and when quiescent. Views somewhat more pleasing in appearance of the Exeter works were also thrown upon the screen. As an example of the continuous system on a large scale mention was made of the filters installed at Salford by Mr. Corbett. The sewage is here discharged from suitably-arranged pipes in a fine spray over the entire surface. The use of coupled syphons for flooding a filtering area was explained, as was also the operation of Colonel Ducat's interesting aërating filters at Hendon. Finally, and in support of the statement that the removal of sludge by biological means was not the least important feature of the system, some English sludge lagoons were shown. Paragraphs quoted from Dr. Rideal's work were read in support of the conclusion drawn by the speaker to the effect that biological processes aid by destroying, and not by increasing, the vitality of dangerous organisms present in sewage.

The section expressed its thanks to Mr. Adams for the trouble which he had taken in bringing forward all this important information, but no discussion ensued.

THE ORIENTATION OF HOSPITAL PAVILIONS.

The section now relapsed into the question of the sun's rays.

Professor SORJANI read a paper on the Orientation of the Pavilions of Hospitals so that they should receive the maximum of direct rays from the sun. Dealing with the mean European climate, Professor Sorjani drew the plan of the pavilion, which he enclosed in a circle. He then divided the circle into 24 hours. Outside the circle he drew a line from 9 o'clock to 15 o'clock. This represented the minimum amount of sunshine, the rays from this line alone reaching the building. Then he drew another line from 6 o'clock to 18 o'clock, which represented the mean sunshine, and from 4 o'clock to 20 o'clock, which gave the maximum amount of sunshine possible. As 24 o'clock was the north and 12 o'clock the south the plan inside this circle showed what portions of the building would receive the direct rays from the sun, and he concluded that it would be best to build from east to west.

Dr. PUTZEYS, delegate of the Belgian Government, pointed out that in many European countries the question of the prevailing wind and rain was as important as that of the rays of the sun. In western Europe, most of the rain and wind came from the south-west; therefore the small side or end of the pavilions should be to the south-west and the north-east. The longer walls would thus escape being continually soaked by the rain and it was worth sacrificing

some sunshine for the sake of dryness; otherwise it would be necessary to have double walls.

M. EMILE TRÉLAT urged that though people sometimes objected to the sun darting its rays into the interior of their rooms too much sunshine could not be obtained. This raised a practical question, for it was of no use to strive to build rooms and elevate windows so that the sun might reach the farthermost wall if directly the sun shone the blind was pulled down. Yet, if this were not done what would become of the colour of the carpets, the furniture, the wall-paper, and all decorations generally? The purification of rooms throughout the summer by the admission of the direct rays of sunlight would entail a complete revolution in the decoration and furnishing of our homes. This was a practical domestic difficulty which the hygienists in their eagerness for pure sunlight entirely overlooked.

THE WAR AGAINST TUBERCULOSIS.

From the Third Section I went to the Seventh Section, where I found that Professor CORFIELD had been speaking on the Reduction of Phthisis in England and Wales. Tables to this effect, which he had exhibited, were still suspended to the wall of the amphitheatre. These showed that whereas the annual deaths from phthisis amounted to the average of 2475 from 1861 to 1871 they were only 1464 from 1891 to 1895 and 1321 from 1896 to 1898. Dr. E. MALVEZ, director of the Bacteriological Institute at Liège in Belgium had read a report on the prophylaxis of tuberculosis. The frequency of this disease among the poorer and labouring classes made it as much a social and economical as a medical problem. When all sections of society possessed the means to live in comfort under good sanitary conditions there would be little or no tuberculosis. Combating the disease in its earliest stages with good hygiene and plenty of food the wealthy succeeded in checking it, but the poorer classes were even refused admission to most of the hospitals. With the establishment in Germany of compulsory insurance the great cost of sick allowances to phthisical patients suggested the necessity of doing something to check this disease. Thus there were now sanatoria where patients were sent at the earliest stage of the malady. Here they were not only treated but taught, so that when they returned home they might know what laws of hygiene they should observe. But in Switzerland and Belgium, where compulsory insurance did not exist, sanatoria had also been erected. Six such institutions existed in Switzerland and a large sanatorium would soon be ready to receive all who suffered from tuberculosis in the province of Liège. Dr. Malvez concluded with the observation that all cases should be reported at the earliest stages, that all forms of poor relief and of medical aid should combine to discover cases and bring them under treatment, and that for this purpose bacteriological laboratories should be established in all directions.

PILGRIMS AND THE PLAGUE.

From tuberculosis the section passed to yellow fever and to plague. On this latter subject Dr. SANTOLIGUIDO and Dr. STEKOULIS, of Constantinople, with others, agreed that another official international conference should be convoked to deal with the question of the plague. The conference which met at Venice was held before the plague had appeared in the Red Sea, Egypt, Smyrna, Beyrouth, and Oporto. Though these were not serious epidemics, they supplied some practical information of a nature calculated to modify the conclusions of the Venice Conference. Besides, Dr. Stekoulis urged, this conference left several questions open and nothing was decided as to the disinfection of merchandise. With regard to the pilgrims proceeding to Mecca, Dr. Stekoulis explained that the Turkish Government had applied the rules as to measurements on board the pilgrims' ships recommended at the Venice Conference, and since then there had been no cases of overcrowding reported such as used formerly to prevail. Nevertheless, these rules were not enforced by any penal enactment, and therefore another conference was necessary so that failure to observe the rules might be rendered a penal offence. Then there had been the question of the quarantine station of Camaran, which at first was in anything but a satisfactory condition. Consequently at the Seventh International Congress of Hygiene held in London in 1891 Dr. Stekoulis brought forward a resolution condemning the insanitary condition of the island of Camaran. This was communicated some time afterwards to Lord Salisbury and Lord Salisbury suggested to the British Ambassador at Constantinople that he should request the International Council of Health to devote the necessary funds for the building of a proper quarantine station at Camaran. The request thus made by the British Government was accepted by the representatives of the other governments, and with the sanction of the Ottoman Government and under the auspices of His Majesty the Sultan the lazaret has been completely rebuilt. Dr. Stekoulis submitted the plan to the section showing the various buildings erected according to the designs of the French engineer, M. Roullet. Distilled water was provided for the use of the pilgrims and ice was manufactured. The dormitories were well ventilated and drained, and since these works were completed dysentery, which was formerly endemic, had disappeared. Dr. Stekoulis thought that this happy result was one of the clearest cases tending to prove the practical utility of holding international congresses of hygiene. In regard to the suggestion that had been made to forbid the pilgrimages when there was danger of plague, though the French and Russian Governments might favour such a proposal the Governments of Great Britain, Holland, and Turkey could not do so on account of the great number of their subjects who were Mahomedans. The section agreed with this view. Finally, Dr. Stekoulis related that the anti-plague serum had been used at Smyrna. 17 people were inoculated, but treatment was only carried out methodically with three patients. The result was a fall in the temperature, a decrease in the nervous symptoms, and though their lives seemed in considerable danger all three patients recovered. All the members of the hospital staff were likewise inoculated and no one contracted the disease.

The section unanimously carried a resolution requesting the French Government to take the initiative in convoking another International Conference on Plague.

Dr. NOTAL of Japan, who spoke in German, described six cases of plague occurring in Japan which were traced to three persons who had bought goods and had had dealings with one and the same ship.

Dr. PUTZEYS of Belgium said that there should be sanitary police to carry out the stipulations of the international conventions. But when the police, the consuls, the merchants, and commercial men knew nothing about these conventions what could be expected? The Belgian Government in the face of this difficulty had caused a curriculum to be drawn up for the education on these points of the police, the consuls, and the merchants.

THE COMPULSORY NOTIFICATION OF SYPHILIS.

The Seventh Section then discussed the report of Dr. H. BOURGES, chief of the Hygiene Laboratory at the Paris faculty, on the various measures taken to prevent the spread of syphilis. The obligation to notify such cases was not usually imposed. The Norwegian law of 1860 stated that medical practitioners must report the number of cases they treat, without, however, giving either names or addresses, so that the information would be useful only for statistical purposes. It was in Denmark that the principle of notification was really applied. Here not only had the medical practitioner to notify all cases of syphilis, but the patients could be forcibly detained in hospitals and submitted to subsequent surveillance. The result was that the average prevalence of syphilis in the Danish army during the years 1889 to 1893 was 2·66 per 1000, whereas in all the other continental armies it exceeded 5 per 1000. In Norway the medical practitioner had to give the name and address of the person who had contaminated his patient to the authorities, but it was very rare that the address was known. French soldiers were also told to denounce the women, but according to Dr. Carry and Dr. Jeard of Lyons the results were not very important. Out of 10 women denounced in a licensed house only one was diseased and only one out of 32 inscribed women who lived in private houses, but out of 100 clandestine prostitutes who were denounced 30 were suffering from syphilis.

THE MEDICAL EXAMINATION OF WOMEN.

In Finland, and even in Norway, when a denunciation had been made the compulsory examination of men was sanctioned. As a rule it was only practised in large agglomerations—barracks, mills, factories, &c. But the Danish law said: "When a case of venereal disease is of such a nature as to justify the fear that it may reappear with contagious characteristics, the doctor who has attended the patient may order him to present himself at a certain ulterior date or to bring a certificate from some other doctor stating that the symptoms of the malady

have not reappeared." Certain countries had preserved old rules that should be abrogated. Thus in Germany the law authorised the immediate discharge, and without compensation, of servants, workmen, and others who were suffering from venereal disease. The factory laws of Russia authorised the employer to break his contract with any workman suffering from this disease. Of course, this was most disastrous in its effects, for in practice it meant that the presence of the disease would be concealed, and therefore it was much more likely to be propagated. Some towns in the United States and cantons of Switzerland had sought to avoid the whole difficulty by abolishing prostitution altogether. About 50 years ago this system was adopted at Munich, but it was not a success, for the prevalence of syphilis among men was tripled in the course of a few years. Therefore prostitutes were allowed to return to Munich, and now most States had abandoned all idea of suppression and resorted to measures of regulation and control. As a rule, however, the details were left to the local police and were not defined by any State laws. The consequence was that there was a total lack of uniformity with very varying results. In Paris, for instance, the women in licensed houses were examined every week and those who lived in private houses only once a fortnight. It was difficult to understand why this difference should be made. On the other hand, at Copenhagen the women were examined twice a week under penalty, if they neglected to present themselves, of four days' imprisonment and of 24 days' hard labour if, having failed to present themselves for examination, it was found that they had contracted a venereal disease. At Lyons women who had been treated and cured were examined twice a week for fear relapses should occur, and in Roumania the names of women who had been diseased were entered on a special register and the women themselves were kept under very close observation. In some parts of Germany, at Frankfort, and at Posen in the Duchy of Anhalt, women who were not prostitutes were examined, such as waitresses in hotels, beer-gardens, &c. Thus there were the extremes from no examination at all to the examination of domestic servants and others, though some of them led quite virtuous lives. According to the statute laws the segregation of women who were diseased was only justifiable in Denmark, Norway, and Roumania, but it was practised wherever prostitution was controlled. In Russia, however, there were not hospitals enough to contain all the women who were diseased. As a rule the treatment was gratuitous.

THE PROPHYLAXIS OF SYPHILIS.

The most interesting part of Dr. Bourges's report was that which dealt with the prophylactic measures which should be taken. In this both the report and the general tone of the discussion which followed constituted a genuine and important manifestation in favour of the preservation of public health as the first duty. It was not a question of moralisation, but of sanitation, and therefore everything which in the name of religion or of morals tended to prevent immediate and effective treatment was denounced as opposed to the best interests of the whole community. All attempts to impose a stigma led to concealment and to more frequent contagion, therefore this was condemned. Though from the therapeutic and scientific point of view it was an advantage to unite all venereal cases in one single special hospital, from the social point of view this kept patients away and therefore gave bad results. Again, certain German hospitals were denounced because in those hospitals patients suffering from venereal disease were treated differently from the other patients, in not being allowed to receive their friends or to take exercise in the gardens. Benefit societies, sick funds, and all other organisations to provide medical aid which refused to give such aid when the patient suffered from venereal disease, or those hospitals which charged for the treatment of this disease and not for other diseases were strongly condemned. Whatever might be thought of the patient the defence of the community rendered it necessary that such patients should obtain prompt gratuitous treatment without any stigma being attached thereto. This was the only way of preventing concealment and of checking the spread of the disease. This was more particularly necessary in countries where prostitution was free from all sanitary control. Yet Dr. Drysdale had declared that throughout England there were not as many beds available for the treatment of venereal disease as in the single town of Paris. Undoubtedly syphilis was in the main propagated by prostitutes and therefore the most effective prophylactic measure was the frequent medical examination of these women. But there were also other means of propagation which, with the exception of the spread of the disease by wet nurses, had been entirely neglected. Glass-blowers and other workers who passed from mouth to mouth the same instrument, hair dressers, cooks, and other manipulators of food, were all capable of spreading syphilis to perfectly innocent persons. Moralising was of service in so far as it succeeded in persuading women to leave the ranks of prostitution, but where by imposing a moral stigma it prevented the prompt treatment of the disease it worked unspeakable mischief, and from this the innocent suffered as well as the guilty.

In the course of the discussion that followed, Dr. DROUINEAU urged that it was necessary to look upon syphilis simply as an ordinary contagious disease. To do this would imply the taking of special precautions. Why not apply the same antiseptic measures—namely, notification and isolation? Public authorities were under the same obligation to attend to this matter as to attend to the suppression of smallpox. What was justifiable in the one case was justifiable in the other. In the provinces they had abolished venereal wards; they no longer hid such patients in garrets, &c., but they sought to attract them instead of frightening them away.

Dr. LANDOUZY was energetic in his protests that the administration should not seek to moralise. Syphilis was contagious like many other diseases; it had the same etiology and needed the same medicaments and prophylaxy. Powers must be acquired to compel the patients to go to the hospital. The patients might be made to pay according to their means but in any case they must be treated and isolated. In the near future various States would probably spend enormous sums to fight tuberculosis and the same would have to be done against syphilis. The stupid idea as to a mortal sin being the cause must be extirpated.

Dr. BERTHAUD said that all agreed that the terms "secret" and "shameful" diseases must be abolished. The question had its social, economic, and police aspects as well as its medical interest. So long as the criminal instead of the sanitary police were employed a sense of shame would prevail. At the Deontological Congress it was agreed that syphilis should be treated on precisely the same footing as all other diseases. Being contagious it should not be shameful or secret.

Professor VALLIN, who presided over the section, thought that though there should be sanitary police the criminal police were also concerned; they had a right to watch prostitutes as a matter of public order and decency.

Dr. LANDOUZY, speaking again, thought that all encouragements should be given to licensed houses as these were far preferable to hidden places that could not be watched. He could not understand why a woman who spread syphilis as her daily business should be allowed to go free while a butcher who sold diseased meat was prosecuted. The woman and the meat were both offered to the public for sale and both should be inspected. They had police against bad meat, they had international conventions against the plague, but syphilis was at the door of every household and nothing was done to prevent its entering.

Dr. BOURGES, the author of the report, thought that medical education was often insufficient with regard to venereal diseases and that it should comprise a certain time spent in syphilitic wards. An Italian practitioner explained that this had been the custom in Italy for twenty-five years.

The section did not come to any definite decision. The chairman, Professor VALLIN, thought that the motions at the end of the report were too lengthy to be put to the vote. But the discussion was sufficiently emphatic in its general tone. Everything should be done to enable both men and women to seek treatment at the very first symptom. There should be no deterring influences brought to bear. Benefit societies, &c., should not refuse medical attendance and sick allowance, and the State and municipalities should provide ample accommodation for those who could not afford to pay. Prostitutes, as persons carrying on an unwholesome trade, must be examined. As for compulsory isolation this was scarcely practicable except with regard to soldiers and prostitutes.

CONCLUSION.

This discussion brings me to the end of what I was personally able to see and hear of the Congress, and as there were eight sections much was said elsewhere of equal interest. But a full account of the Congress would fill a volume, and doubtless when the official report appears it will

prove to be a weighty tome. Perhaps, however, what I have been able to describe will suffice to show not only that these congresses are interesting and instructive in themselves, but that they do influence the legislation of many countries and do help to bring about useful reforms. As for the work of the sections which I was not able to attend—for it is not possible to be in eight different places at one and the same time—some idea may be gathered of what they did from the resolutions which they adopted and which were confirmed at the general and final meeting of the Congress. The Congress was not so numerously attended as were the previous congresses; it was therefore more compact, more easy to manage, and everything was carried out punctually according to the programme; there was no hitch, no disappointment, and the members and delegates finally separated satisfied at having accomplished a good work.

THE CONGRESSES ON PSYCHOLOGY AT PARIS.

(FROM OUR SPECIAL CORRESPONDENT.)

A MULTITUDE OF PSYCHIC INVESTIGATORS.

THE number of international congresses which have just been held in connexion with the Universal Exhibition at Paris and which dealt with psychic phenomena may be taken as evidence of the increasing interest this subject is awakening. Many of the best-known scientific authorities on these questions have attended either the Second Congress of Hypnotism, or the Fourth Congress of Psychology, or both, and have helped to found the newly-created International Institute of Psychology. Then there has been the International Congress on the History of Religions, which at first sight seems to be quite a different subject. But this Congress discussed the question of the miracles which all religions claim as confirming their faith. Then folk-lore was discussed with its wonderful stories of witchcraft, necromancy, &c., and evidence is being carefully collected to attempt to show that these popular delusions and superstitions might occasionally have had some foundation in the facts now scientifically demonstrated of the power of suggestion on certain hypnotic subjects. Of course, these are points still involved in much obscurity and about which doubts may very justifiably be expressed; nevertheless, it is a sign of the times that they have brought together men of science from all parts of the world who are determined to sift the evidence and by practical experiments to demonstrate what is possible. The result of these discussions and experiments would fill many volumes and I cannot attempt even to summarise what was said and done. Those who are interested must apply to the persons principally concerned, to the responsible general secretaries, and judging by the courtesy by which the French are distinguished there is no doubt but that they will receive printed information, reports, &c. Thus, for the proceedings of the International Congress on Hypnotism applications should be made to Dr. Bérillon, 14, rue Taitbout, Paris, and for those of the Congress on Psychology to Dr. Pierre Janet, 21, rue Barbet-de-Jouy, Paris. M. S. Yourievitch, Attaché of the Russian Embassy in Paris, 19, rue de l'Université, is the general secretary of the International Psychological Institute.

SUB-CONSCIOUSNESS.

The Congress on Hypnotism was well attended. Dr. JULES VOISIN, of the Salpêtrière Hospital, presided and Professor RAYMOND from the same hospital delivered the inaugural address. Reports were read by Dr. OSKAR VOGT of Berlin and by Dr. PAUL FAREZ on the Value of Hypnotism as a Means of Psychological Investigation. The latter propounded the somewhat startling theory that man was not composed of one but of several individualities. There was a chief among them who governed, but under hypnotism this mental leader might be converted into a mere spectator, conscious or unconscious. Then the secondary individualities who were autonomous, though disciplined in hierarchical order, were able to act on their own responsibility. Thus there was, according to this theory, a psychological atomism just as undoubtedly there was a chemical atomism. These sub-conscious selves were described as veritable psychological laboratories, which received and registered impressions. These impressions, &c., ran a great risk of being entirely forgotten through being over-ridden by the dominant self or the chief in the hierarchy of the many selves that were gathered together in the one individual. By hypnotism we might, as it were, temporarily dethrone the chief and then the subordinates were free to tell what they knew. Thus memories of things long forgotten were recalled and faculties evoked which in the normal state were obliterated or rather kept in the background.—Dr. FÉLIX REGNAULT, in a report on the same subject, sought to show how hypnotic ecstasy explained the ecstasy described in the lives of saints and urged that the part played by suggestion in the action of crowds would furnish a totally different explanation to many of the most important facts of history and had more to do with the winning of battles than the strategy of generals and the weapons of the combatants.—Dr. P. JOIRE of Lille, dealing with the forensic aspect of the question, thought that the power which hypnotism gave might be exercised for evil as well as for good, yet the police records showed that such cases were very rare. On the other hand, the scientific knowledge of hypnotism could render very great service in the discovery of criminals. To hypnotise a person so as to make him confess his crimes would be equivalent to the re-establishment of examination by torture. But the victim of a crime might well be questioned under hypnotism, his memory thus being revived, and the police put on the track of the criminal. Many other questions were raised, but this brief mention of one or two among them may serve to give some idea of the Congress.—The members visited the Salpêtrière Hospital and Dr. Bérillon's clinic in the rue des Arts, where they witnessed the treatment of the patients.

THE INTERNATIONAL PSYCHOLOGICAL INSTITUTE.

The Fourth International Congress of Psychology was very numerously attended, though both Professor Lombroso and Professor Ferri, from Italy, who had promised papers, were not able to come. The German professors, however, were in great force and read several papers. One of the most interesting features of this Congress was the contest that arose on several occasions between the materialist and spiritualist schools. The latter must not be confused with what in England is improperly called "spiritualism" instead of "spiritism." By "materialist" is meant the school that traces every mental phenomena to some condition of the physical body. The "spiritualist," on the contrary, conceives that the individual may possess some form of intelligent existence that can and does act independently of the animal body. This of course leads to the tremendous problem as to whether mind is the fruit of matter or matter the mere instrument of the mind. Consequently, if we wish to act upon the mind, must we deal with the body or can we act on both mind and body by dealing only with the mind? Then, to answer this fundamental question, have the experiments made in the domain of psychology been of any real service? It was generally felt that the scientific study of material things had progressed out of all proportion to the very slow advance of psychic research, that the whole tendency of western civilisation was to study and develop the knowledge of the material resources of nature rather than its psychic or spiritual powers and knowledge. Consequently when it was proposed to the Congress that an international society should be formed so as to establish an International Psychological Institute the suggestion was warmly supported. This institute has now been established and possesses a very influential committee, comprising, among many others, Mr. James Mark Baldwin, Professor of Psychology at the University of Princeton; Professor W. F. Barrett, F.R.S., of the Royal College of Science, Dublin; Dr. J. Milne Bramwell (London); Sir William Crookes, Professor Oliver J. Lodge, F.R.S. (Liverpool), and other English and American medical men. Nearly all the leading French authorities on this subject are members of the committee, such as Dr. Pierre Janet, Dr. Paul Joire, Dr. Bernheim Baraduc, Dr. E. Boirac, Dr. Bouchard, Dr. Duclaux (director of the Pasteur Institute at Paris), Dr. Durand-de-Gros, Dr. Liebeault of Nancy, Dr. E. Metchnikoff of the Pasteur Institute, Dr. Charles Richet, Dr. Ch. Ribot, and others. From other countries may be mentioned Professor Mendéleieff of St. Petersburg, Dr. Ochorowicz of Warsaw, Dr. F. von Schrenk-Nötzing of Munich, and Professor Flournoy of Geneva, Professor Lombroso of Turin, Dr. P. Visani Scozzi of Florence. Altogether there is here a list of men which gives good promise if instead of merely lending their names

to the institute they will also work in conjunction with one another to elucidate the problems taken in hand.

HUMAN VIBRATIONS.

To return to the Congress of Psychology, what is likely to interest the greatest number, at least of outsiders, are the material facts that can be brought forward. But before it is possible to reach a fact it is most necessary to be able to detect a fraud. In this respect Dr. Encausse, who for many years was a co-worker with Dr. Luys in the hypnotic wards of the Charité Hospital, submitted some drawings of tables, chairs, sofas, &c., which were so arranged with electric wires that they would at once reveal even in the dark any fraudulent movement on the part of a so-called medium. If such contrivances were in more general use much of the prevailing imposture would be rendered impossible. Then Dr. JOHN E. PURDON, from California, read a paper on the "Transfer of Sensori-Motor Impulses proved by the Sphygmograph." Dr. J. E. Purdon argued that Mr. John Beattie of Bristol, England, had demonstrated that "emanations from the living body which may provisionally be termed vital vibrations could and actually did under a variety of forms impress themselves" on photographic plates. Dr. Purdon, however, deemed that such action could be more readily studied upon another similar organism. For this purpose the sphygmograph was employed, and the tracing resulting from a great number of experiments showed, it was claimed, that "a forced vibration due to the dominance of a second person propagated in some unknown manner from his nervous system to that of the other person can be obtained."

Apart from the three congresses just mentioned and which are official congresses there have been other non-official congresses where notably "spiritists" have talked a good deal of nonsense and have made any number of affirmations they were absolutely unable to prove. But amid much of this sort of loose talk there have been read some thoughtful papers written by persons who have had lengthy scientific training, and it is all symptomatic of a great and widespread craving for more light on these mysterious questions. The Paris Universal Exhibition in gathering together people from all parts of the world has supplied the opportunity for rendering manifest this growing tendency, this desire to unravel past superstitions, and to bring all strange and as yet unexplained phenomena to the test of scientific investigation.

Paris, Sept. 23rd.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Plague in Foreign Ports.

IN view of the possibility of the introduction of plague into the port of Liverpool the medical officer of health (Dr. E. W. Hope) has issued a short memorandum drawn up by Dr. Balfour Stewart of University College showing the salient features of the disease. Dr. Hope lays stress upon the fact that cases of pneumonia of uncertain character or patients suffering from bubo without apparent cause may seek medical advice. Having regard to these circumstances he has made arrangements for the isolation in the city hospitals of such cases, and the sputum of any doubtful case of pneumonia will be examined on application to Dr. Balfour Stewart at the Thompson-Yates Laboratories, University College. The names and addresses of all persons coming from infected ports are taken on arrival in the port, and Dr. Hope is prepared to give any information in his possession as to the antecedent movements of any stranger to the town. The "memorandum" points out that plague is generally associated with enlarged lymphatic glands, but not always. In the greater proportion of cases the enlarged glands are those of the groins, both the inguinal and femoral chains of glands being involved; next in frequency come the axillary glands; those in the cervical region are rarely enlarged. It is seldom possible to find a peripheral focus of infection; when it is found it is often a mere pimple. In an early case tenderness on pressure over one or other glandular region is found before the glands enlarge. There are two types of plague—pestis minor and pestis major. In *pestis minor* or *ambulatory plague* enlarged and tender glands are found; the constitutional symptoms are malaise and slight rise of temperature. In some such cases of exceptional mildness advice would probably not be sought. In *pestis major* three forms are found: (*a*) bubonic, (*b*) pneumonic, and (*c*) septicæmic. The *bubonic* (*a*) form in which enlarged lymphatic glands occur is the most common. The buboes may vary in size from that of an almond to that of a small orange. At first a hard and enlarged gland is felt, tender on pressure. Afterwards there is generally more or less œdema of the subcutaneous tissue around the gland, and the skin pits on pressure and appears sodden and of a dull red colour. Later the bubo begins to soften in the centre and a hard ring is felt around the breaking-down mass. The patient has an anxious and dazed expression; he appears dull and stupid, as if under the influence of a drug, and later there may be delirium. The conjunctivæ are injected. The temperature varies from about 101° to 104° F. The *pneumonic* (*b*) form is generally that of broncho-pneumonia. It may follow on the bubonic form or it may be primary, in which case buboes are seldom found. It is rapidly fatal. The *septicæmic* (*c*) form has no peculiar characteristics to show that the blood-poisoning is caused by specific infection. It is also rapidly fatal. The *bubonic* (*a*) form is the only form that would be likely to be diagnosed from the symptoms and signs *per se*. A case of broncho-pneumonia where the constitutional symptoms were severe in proportion to the amount of lung trouble or a case of septicæmia which could not be accounted for would suggest the advisability of questioning the family for any other case of illness. Should plague unfortunately come to this city it would be very important to discover the first case. To this end it would help, if the possibility were borne in mind, however remote, of (1) cases with enlarged glands appearing suddenly and without apparent cause; or (2) cases of pneumonia being due to this disease. The following resolution was carried by the council of the borough of Bootle:—

That this council, as the local authority for the borough under the Infectious Diseases (Notification) Act, 1889, doth hereby order that as a case of emergency the said Act shall apply within the borough to the infectious disease known as "plague"; that the cause of such emergency be declared to be (*inter alia*) the present outbreak of bubonic plague at Glasgow and the highly infectious nature of the disease; that such order shall continue in force for three months from its coming into operation at the expiration of one week from the date of the order being advertised; and that application be made to the Local Government Board for their approval of such order.

Sept. 25th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Aberdeen Royal Infirmary.

THE servants of the municipal corporation have declined to accept a suggestion that each should contribute so much regularly to this hospital and, on the contrary, have resolved to contribute nothing at all, holding that the institution should be put on the rates and managed by a popularly-selected body.

Aberdeen Royal Asylum.

The managers of the Aberdeen Royal Lunatic Asylum are to purchase at the price of £7750 the lands of Ashgrove, adjoining the present grounds of Elmhill.

Sept. 25th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The late Sir William Stokes.

IT is a sad coincidence that on the day when the account of the funeral of the late Sir William Stokes appeared in the Dublin papers the death of his accomplished sister, Miss Margaret Stokes, was also announced. She was widely known as the author of many standard works on Irish ecclesiastical architecture. Miss Stokes devoted a lifelong study to the subject and since the death of Dr. Petrie she was recognised as the highest authority on the matter.

The New Veterinary College for Ireland.

The site for the new Veterinary College in Dublin—already mentioned in THE LANCET—is causing some adverse criticism of the sanitary authorities who are accused of not being sufficiently alert. Mr. Meldon, D.L., F.R.C.S. Irel., writes that the College, if permanently established in its present position, will not alone be a source of great danger to the

public health, but prove an injury to all the valuable property in its immediate neighbourhood.

Richmond District Lunatic Asylum.

An epidemic of typhoid fever now prevails at the Richmond Asylum. The medical superintendent reported on Sept. 20th that there were then 22 cases, 14 being among the patients of the institution and eight among the nurses.

The Samaritan Hospital, Belfast.

As a result of the *fête* on behalf of this hospital, which was so well organised by Miss Henderson of Norwood Tower, Belfast, and which took place on July 6th and 7th, a net sum of £325 was raised. Dr. J. St. Clair Boyd, one of the hospital surgeons, in accordance with his generous promise that he would clear off whatever remained on the debt has added £125. The Samaritan Hospital has also received a sum of £1000 from the family of the Belfast millionaire—Mr. James Craig.

The Proposed Technical Institute in Belfast.

The city corporation of Belfast has very wisely decided to build a new technical school in Belfast and have selected an admirable site in the centre of the city on a portion of the grounds purchased from the Royal Academical Institution. They have also appointed an efficient architect and they very prudently arranged on Sept. 24th to go a little further and to appoint at once a principal for the institute at a salary of £600 per annum, whose coöperation and experienced practical advice would be of great value in settling the interior arrangements of the building and in organising during the interval of its construction. In this way the new principal would find a place in every way suited to his wants.

Queen's College, Belfast: the President's Report.

From the President's report just issued I find that during the Session 1899-1900 there were 353 students at Queen's College, Belfast, but as six attended in more than one faculty there was a net number of 347. In the Faculty of Medicine there were 214 students, an increase of eight over the preceding session. References are made to the loss the College has sustained in the deaths of Dr. Cuming, Dr. Hodges, and Dr. W. N. Watts, all of whom were professors, and a former librarian, the Rev. G. Hill. A full account is given of the success of the students at the various universities. Dr. W. A. Osborne has been appointed assistant professor of physiology at University College, London; Dr. B. Moore has been selected as lecturer on physiology at Charing-cross, London; Mr. F. G. Dennan, M.A., has been appointed assistant to Professor Ramsay in University College, London; and Dr. W. Hanna, sent out by the Government to India to inquire into the nature of the plague, now occupies a high position in the Plague Laboratory at Bombay. All of these old Belfast College students held research scholarships as founded by Her Majesty's Commissioners for the 1851 Exhibition. The various College museums have been well cared for during the year, and owing to the great and most praiseworthy exertions of Dr. H. O'Neill, the Museum of Hygiene and Sanitary Science has made the greatest progress. A mechanical workshop has been opened. While in the medical school the number of departments has been exactly doubled in the last 10 years a new physical and a new biological laboratory as well as the completion of the buildings erected for the department of chemistry are much needed. The present President has already done so much to improve Queen's College during his period of office that I am sure he will manage to get all these wants supplied.

Commission in the Royal Army Medical Corps.

Dr. J. W. West, house physician to the Royal Victoria Hospital, Belfast, has been given the commission in the Royal Army Medical Corps which was placed by Government at the disposal of the authorities of Queen's College, Belfast.

New Medical Local Government Board Inspector.

Dr. E. C. Bigger of Belfast has been appointed a medical inspector under the Irish Local Government Board. The appointment has not arisen from any vacancy, but it has been decided to add a new inspector for Ulster in addition to the present one—Dr. C. J. Clibborn—the work being very onerous. Dr. Bigger's district will comprise the northern part of Ulster and his headquarters will probably be Londonderry. Dr. Bigger was senior visiting medical officer to the Belfast Union Hospital and superintendent medical officer of health of the rural portion of the union. He in former years held a dispensary medical district in Belfast. He has thus had an admirable training in the work over which he will now act as inspector. Dr. Bigger was an alderman of the Belfast City Council and a prominent member of the Public Health Committee, and at a meeting of that committee on Sept. 20th a resolution was passed congratulating him on his promotion and speaking of his fitness and high qualifications for the inspectorship.

Sept. 25th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

On Herpes in general and the rôle of Influenzal Herpes in Pneumonia and other Infectious Maladies.

M. VIDAL of Hyères laid before the Academy of Medicine in July, 1899, some observations as to the frequency of zonal and other forms of herpes in influenza. During the latest epidemic of influenza he has been able to confirm these observations. M. Vidal has established the relation which exists between herpes, of which disease he gave a general definition, and the method of penetration of different organisms into the body. Localised groups of bacilli, according to M. Vidal, give rise to diseases of different organs which are thus laid open to attack by the secondary bacillary products, while the presence of bacilli in the blood-vessels gives rise to a general infection. M. Vidal related some experimental investigations which he considered to bear out his theory and concluded by describing the part played by herpes in influenzal pneumonia.

The Physiological Action and Therapeutics of Compressed Air.

At the meeting of the Academy of Sciences held on Sept. 3rd M. Mosso said that an atmosphere containing as much as 50 per cent.[1] of carbon monoxide was not fatal to mice provided that pure oxygen was also supplied at a pressure of two atmospheres. M. Mosso was able to establish the like facts with regard to larger animals such as monkeys, dogs, and rabbits. A mixture containing 6 per cent. of carbon monoxide showed no harmful effects provided that oxygen was present under a pressure of two atmospheres or air at a pressure of 10 atmospheres, whereas 0·5 per cent. of carbon monoxide will bring about death at ordinary pressures. M. Mosso also found that if the animals were brought straight out of the mixture of oxygen and carbon monoxide into the air they died at once, but that if the mixture were gradually purified the blood was regularly washed (*on produit un véritable lavage de leur sang*), and at the end of about half an hour they could without danger be placed in a normal atmosphere. M. Mosso considered this last fact to be particularly interesting from a therapeutical point of view. Take for instance the case of a mining accident where men live in a condition of partial asphyxiation for hours or even days; it is probable that many of these would be saved if immediately after they were brought up they were placed in an atmosphere containing oxygen under pressure.

The Last Sign of Life.

Mr. Augustus D. Waller has reported to the Academy of Sciences a distinctive sign which permits the recognition in a few moments whether any organ or tissue, animal or vegetable, is living or dead. The reaction is based upon the following principle. Living matter responds to an electrical excitation by a current in the same direction. This same substance killed by exposure to a high temperature no longer responds to the excitation, or if it does it shows a polarisation current in the opposite direction. This positive reaction proves, according to M. Waller, that the object examined is not lifeless; it is a general and characteristic phenomenon of living matter as such, and one which is found in the nerves, muscles, retina, skin, liver, &c., in animals, and in the leaves, roots, fruits, seeds, &c., in vegetables. It is their last sign of life by means of which it is possible to recognise immediately whether they are still alive and even, up to a certain point, to measure and to express in figures how much vitality they retain.

Obituary.

Dr. Alfred Lamoureux of Paris, Municipal Councillor and Member of the General Council of the Seine, died last week. He had for a long time been suffering from heart disease.

Sept. 25th.

[1] If this percentage is correctly quoted the statement is indeed remarkable.—ED. L.

ROME.

(FROM OUR OWN CORRESPONDENT.)

The Anti-Malaria Campaign.

THE strenuous efforts now being put forth in Italy to combat malaria and tuberculosis make it necessary to return frequently to these topics in order to follow the progress of the campaign against them. In regard to malaria the *Accademia dei Lincei* publishes the first report of the experiments undertaken by Professor Grassi and others along the Battipaglia-Reggio line of railway from San Nicola Varco to Albanella, over a distance of some eight miles. The objects aimed at were two: (1) to prove that malaria can be contracted only through the bites of anopheles; and (2) to find means of overcoming the practical difficulties that stand in the way of an efficient prophylaxis. Altogether 104 persons, including 33 children under 10 years of age, were kept under observation, all of them being railway employés with their respective families, living at the two stations and in various houses, 10 in number, along the line. The locality chosen, the Plain of Capaccio, is among the most unhealthy in all Italy. The persons selected for the experiment had all been examined during the non-malarial season—that is to say, before the anopheles had become infected—and those found to be malarious had been treated with quinine. The preventive measures adopted were the protection of the houses from the entrance of mosquitoes by wire gauze over the windows and the wearing by any persons obliged to be on duty outside after sunset or during the night of a simple veil attached round the hat with elastic, and of thick cotton gloves with tight sleeves. All who could went indoors at sunset and did not come out again till after sunrise. It was found very difficult, especially at first, to induce the people to observe these simple precautions in the efficacy of which they had no faith, but, nevertheless, of the 104 individuals experimented upon, excepting three cases of relapses which had escaped the previous treatment by quinine, not one has so far been attacked by malaria. This is very fortunate, for in spite of all precautions some anopheles succeeded in inflicting their bites, and although the proportion of infected insects is small (1 per cent.) one of these latter might easily have found its way into a house and inoculated some of the inmates. The better to supervise the experiment Professor Grassi spent three days a week on his field of operations, sleeping at the station of Albanella with open windows (covered, of course, with the wire gauze), and the same was done, though for shorter periods, by Dr. Martirano and Dr. Blessich who assisted him. While the subjects of the experiment thus enjoyed a complete immunity from malarial fever the other inhabitants of the same locality, who may be regarded as so many control subjects, not having been protected in any way against the anopheles, fared very differently, having, it is stated, been all attacked, even those living under otherwise superior conditions. Other similar experiments have been carried out by Di Mattei in the Val Savoja[1] and by Dr. Fermi and Dr. Tonsini on the Island of Asinara,[2] near Sardinia. The former place is exceedingly malarious and the mosquitoes are numerous; nevertheless, by the aid of wire gauze over the windows of the house and the use of oil of turpentine on the hands and faces of the five inmates who carried out the experiment the mosquitoes were kept away and no case of malaria occurred during a period of four months. Elsewhere in the locality malaria was raging. In Asinara the conditions are peculiarly favourable for testing the practicability of entirely ridding a given area of malaria by destroying the mosquitoes infesting it. Dr. Fermi and Dr. Tonsini by destroying the larvæ with petroleum and the adult mosquitoes by means of pyrethrum, chrysanthemum, valerian, and zanzolina, succeeded in exterminating anopheles in the island and greatly diminishing the number of culex pipiens. At the same time use was made of wire gauze over the windows of the houses to protect the inhabitants from being bitten, with the result that no fresh case of malaria occurred in the island, although in the previous year 40 persons had contracted the disease there. The experiment was carried out last year from June to November and is being continued this season.

[1] Annali d'Igiene Sper., fasc. 2, 1900.
[2] Ibid.

The "Sanatorio Umberto I."

The commission charged with the selection of a site for the Milanese Sanatorium have recommended a place in the Valtellina (one of the valleys leading from Italy to the Engadine), named Sortenna, above the village of Sondalo and overlooking the whole of the valley from Tirano to Belladore. It is situated in the midst of woods at an elevation of close upon 4000 feet above the sea and has an excellent aspect to the south-west. The commune of Sondalo has offered to give all the ground required for the purpose gratuitously. The Novara commission appointed for a similar purpose has chosen a site at Gozzana, in the beautiful neighbourhood of the lake of Orta, at an altitude of 1140 feet above sea level. The aspect is full south and it is thoroughly sheltered from the only wind prevailing on the lake—namely, the north. It is instructive to note the considerations which guided the commissions in their choice of a suitable site. These were shortly as follow: (1) a central position for the different parts of the province; (2) vicinity to a railway station; (3) easy access to a town where all necessaries are readily procurable; (4) vicinity of a good carriage road; (5) ample grounds of a nature suitable for building purposes and varied in its character, partly wooded, partly cultivated, and in meadow; (6) moderate cost of the land; (7) a good elevation above the sea; (8) abundance and good quality of water-supply; (9) sunny aspect; (10) situation sheltered from prevailing winds; (11) choice of walks in all directions among numerous pine and other resinous trees without patients requiring to leave the grounds; (12) electric lighting at small cost; (13) absence in the neighbourhood of factories or densely populated spots; and (14) isolation (by a stretch of intervening ground) from adjoining habitations.

Sept. 24th.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—In September the following candidates passed in the subjects indicated:—

Surgery.—J. Black, Manchester; J. W. Bowd, St. Bartholomew's Hospital; D. J. Ferris (Sections I. and II.), Manchester; J. Gallagher, Bombay; E. T. Longhurst, St. Mary's Hospital; C. C. Pratt, St. George's Hospital and Bristol; J. M. Ritchie, Durham; and H. V. Swindale (Sections I. and II.), Middlesex Hospital.
Medicine.—A. G. H. Anthonisz (Section I.), University College Hospital; M. A. Curry, Bombay; D. Davies, London Hospital; and M. R. Kapadia, Bombay.
Forensic Medicine.—A. G. H. Anthonisz, University College Hospital; D. Davies, London Hospital; D. J. Ferris, Manchester; and M. R. Kapadia, Bombay.
Midwifery.—J. C. Baggs, St. Thomas's Hospital; W. A. King, Charing Cross and St. George's Hospitals; and V. F. Wall, St. Mary's Hospital.
The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—D. Davies, J. Gallagher, C. C. Pratt, and J. M. Ritchie.

UNIVERSITY OF DURHAM.—At the Third Examination for the degree of Bachelor of Medicine, held at the College of Medicine, Newcastle-upon-Tyne, in September, the following candidates satisfied the examiners:—

Second-Class Honours.—Gayton Warwick Smith, Guy's Hospital; Thomas Corrie Rutherfoord, St. Thomas's Hospital; and James Bowden Waters, College of Medicine, Newcastle-upon-Tyne.
Pass List.—Edmund Howard Barrett, M.R.C.S., L.R.C.P., St. Mary's Hospital; Arthur John Spiller Brandon, St. Thomas's Hospital; Samuel Thomas Cochrane, College of Medicine, Newcastle-upon-Tyne; Charles Fisher, M.R.C.S., L.R.C.P., St. Bartholomew's Hospital; Ida Emilie Fox, London School of Medicine for Women; George Brittan Gill, Hugh Robert Kendal, John Herbert McDowall, Leonard Clark Newton, and Robert Reid Pirrie, College of Medicine, Newcastle-upon-Tyne; Monica Lucien Mary Robertson, London School of Medicine for Women; and Hermann Heinrich Ruffmann, Frederick George Wilson, Norman Bryan Walker, Thomas Wilson, and Robert Younger, College of Medicine, Newcastle-upon-Tyne.

FOREIGN UNIVERSITY INTELLIGENCE.—*Athens:* Dr. Constantin Savas has been appointed to the chair of Hygiene and Bacteriology.—*Berlin:* Dr. A. Buschke has been recognised as *privat-docent* of Dermatology and Syphiligraphy.—*Cagliari:* Dr. G. Pinna has been recognised as *privat-docent* of Medical Pathology.—*Breslau:* Dr. Richard Stern has been promoted to an Extraordinary Professorship of Internal Medicine.—*Copenhagen:* Dr. Oscar Wanscher has been promoted to an Extraordinary Professorship of

Medicine.—*Erlangen:* Dr. Oscar Schulz has been recognised as *privat-docent* on Physiological Chemistry.—*Genoa:* Dr. Giuseppe Ingianni has been recognised as *privat-docent* of Surgical Pathology.—*Gratz.* Dr. Theodor Pfeiffer has been recognised as *privat-docent* of the Pathology and Therapeutics of Internal Diseases.—*Munich:* Dr. O. Messerer, Extraordinary Professor of Forensic Medicine, has been appointed Honorary Professor.—*Naples:* Dr. Prospero Guidone has been recognised as *privat-docent* of Operative Medicine.—*Palermo:* Dr. Gaetano Lodato has been recognised as *privat-docent* of Ophthalmology.—*Parma:* Dr. Marco Pitzorno has been recognised as *privat-docent* of Anatomy.—*Strasburg:* Dr. W. A. Freund, the well-known gynæcologist, is about to retire from the chair of Diseases of Women. The names mentioned in connexion with the chair are those of Professor Fehling of Halle and Professor Frommel of Erlangen.—*Vienna:* The following *privat-docenten* have been promoted to be Extraordinary Professors: Dr. H. Ehrmann, Dr. J. Pal, Dr. E. Redlich, and Dr. A. Elschnig.

THREATENING A MEDICAL MAN.—At the Tredegar Police-court last week a collier was fined £5, or as an alternative one month's imprisonment, for threatening to assault Dr. Joseph Morgan Richey, who had refused to give a certificate enabling compensation to be claimed.

CARTWRIGHT MEDAL FOR ESSAY ON DENTAL SURGERY.—A scheme has been sanctioned by the Charity Commissioners by which £644 left to the Royal College of Surgeons of England in 1884 will be devoted to providing every four years a "Cartwright Medal" for an essay on Dental Surgery. The medal will be accompanied by an honorarium.

PRESENTATION TO A MEDICAL MAN.—At Newton Abbot, Devonshire, on Sept. 21st, Mr. R. Hannbly, on behalf of the nursing class of the St. John Ambulance Association, presented Mr. Richard Henry Grimbly, M.R.C.S.Eng., L.S.A., with a silver fountain pen in appreciation of his services as honorary lecturer.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The Secretary of State for War having granted the President of the Royal College of Surgeons in Ireland two nominations for commissions in the Royal Army Medical Corps Mr. Myles has nominated Mr. J. Langdale Jones and Mr. G. Faber Sheehan, licentiates of the College and past pupils of the College school, for the vacancies.

PURE MILK FOR HOSPITAL PATIENTS.—With the view of procuring a perfectly pure supply of milk for the patients in the Infectious Hospital the Paisley Town Council on Sept. 11th formally opened a model byre for the purpose of providing milk free from tuberculous taint. The byre is managed by a local dairyman who purchased the cows. The corporation had them officially examined under a tuberculin test and all cows exhibiting tuberculous taint were slaughtered.

CHARING-CROSS HOSPITAL MEDICAL SCHOOL.—The students of the Charing-cross Hospital Medical School will open their session on Oct. 1st by giving a conversazione to their friends, commencing at 7.30, among the attractions being physiological, chemical and electrical experiments, and demonstrations of x-ray apparatus. Dr. Abercrombie will show some lantern-slides prepared from photographs taken during a recent visit to Egypt. During the evening concerts will be given and a new and original one-act play will be performed for the first time entitled, *An Unconventional Afternoon*, by Charles Willoughby Stanhope.

BRISTOL ROYAL INFIRMARY.—At the half-yearly board of the governors of this institution held on Sept. 25th it was unanimously resolved, on the motion of the Dean of Bristol (chairman), seconded by Dr. Shingleton Smith:—

That Mr. Richardson Cross having resigned the office of honorary ophthalmic surgeon the warmest thanks of the governors be accorded him in recognition of the very valuable services he has rendered to this institution throughout the last 22 years, during which period he has successively held the posts of honorary assistant surgeon, honorary surgeon, and honorary ophthalmic surgeon, and that he be appointed honorary and consulting ophthalmic surgeon.

At a subsequent meeting of the committee of election Dr. Alexander Ogilvy, B.A., M.D., B.S. Dub., F.R.C.S. Irel., was unanimously elected honorary ophthalmic surgeon in the place of Mr. F. Richardson Cross, M.B. Lond., F.R.C.S. Eng., resigned.

HOSPITAL COLLECTIONS AT FALMOUTH.—The receipts of the Hospital Saturday and Sunday recently held at Falmouth amounted to £78.

NEW WORKHOUSE FOR BARTON REGIS.—On Sept. 18th the Dowager-Duchess of Beaufort laid the foundation-stone of the workhouse for the Barton Regis (Bristol) Union. The total estimated cost is £32,852.

COCKLES AND TYPHOID FEVER.—At the meeting of the Honiton District Council the medical officer of health (Dr. F. M. Reynolds) reported two cases of typhoid fever at Sidbury which were caused by eating cockles obtained from Exmouth.

SELF-INDUCTION OF ABORTION.—An inquest was held in Bath on Sept. 20th upon a married woman aged 36 years. It was proved that deceased had taken drugs and used an instrument upon herself for the purpose of procuring a miscarriage. Medical evidence showed that the drugs were harmless but that the deceased had used an instrument. The coroner said the woman had paid the penalty of her own foolish act and evidently nobody else was implicated. The jury returned a verdict of "Death from septic poisoning."

PHARMACY FOR THE LONDON CONJOINT BOARD.—The Birkbeck Institution is holding classes with practical work in chemistry, physics, biology, and practical pharmacy for the first professional examination of the Conjoint Board. The pharmacy class is conducted by Mr. F. A. Upsher Smith, pharmaceutical chemist, member of the Pharmaceutical Society, and until recently demonstrator of pharmacy and materia medica at the Pharmaceutical Society's school. Preparations for the next Conjoint pharmacy examination will commence on Wednesday, Oct. 3rd, at 6 P.M.

HEALTH OF GLAMORGANSHIRE.—The annual report of Dr. W. Williams, the medical officer of health of the county of Glamorgan, which has just been issued, shows that in 1899 the population of the county was estimated at 616,270. The births during the year numbered 19,868 and the deaths 11,383, equal to a birth-rate of 32·2 and a death-rate of 18·4 per 1000. Of every 1000 children born 202 died under one year of age, the highest infantile mortality that Dr. Williams has had to record. The principal zymotic diseases caused 1753 deaths. Phthisis caused 531 deaths. Five cases of small-pox were notified during the year. Dr. Williams states that works of sewerage and sewage-disposal of considerable importance had been carried out during 1899, but he added that the inspection of dairies, cowsheds, and milkshops was carried out in a very lax way in most districts.

THE UNIVERSITY OF LONDON.—The committee concerned with the nomination of members to represent upon the Senate of the University of London the medical graduates of convocation (including amongst others Lord Lister, Sir Samuel Wilks, Sir William Broadbent, Sir John Williams, Sir Richard Douglas Powell, Mrs. Scharlieb, M.D. Lond., Dr. P. H. Pye-Smith, Dr. S. J. Gee, Dr. W. H. Allchin, Mr. H. G. Howse, Dr. H. Montague Murray, Dr. J. R. Bradford, Dr. W. Pasteur, and Dr. E. Lauriston Shaw) desire it to be known that the selection of Dr. J. F. Payne and Dr. T. Barlow as candidates was made essentially on the following grounds:—First, that these gentlemen are pledged to no party and are prepared to consider the many questions that will come before the new senate without prejudice and to support and strengthen the reconstituted university as a whole. Secondly, that Dr. Payne is a member of the existing senate and that Dr. Barlow was a member of the late statutory commission.

MEMORIAL HOSPITAL, BULAWAYO.—The report of the Memorial Hospital, Bulawayo, for the 12 months ending June 30th, 1899, shows that much activity has prevailed during that time, one of the events being the completion of extensive alterations and additions to the hospital buildings. The cost of maintenance of the institution during the 12 months was £9950. The income was £10,874, made up as follows:—Maintenance fees from paying patients, £3786; subscriptions, £2554; and grants from the British South Africa Company, £4534. The daily average cost for maintenance of all patients, European and white, was 9*s.* 11*d.* The hospital has a monthly grant of £300 from the Government—i.e., the British South Africa Company—

on condition of providing for a daily average of 20 white and 20 native free patients. The total number of patients treated during the 12 months was 1238, consisting of 865 white (836 men and 29 women) and 373 black (358 men and 15 women). Among the whites there were 41 deaths, or 4·7 per cent., and among the blacks 62 deaths, or 16·6 per cent. The most frequent disease was malarial fever, of which there were 461 cases, with 14 deaths. There were also 11 cases of blackwater fever, with three deaths; 48 cases of dysentery, with three deaths; 10 cases of typhoid fever, with one death; and two cases of Malta fever, both of which recovered. The resident surgeon (Dr. F. A. Arnold) was re-engaged for a further period of two years.

PLAISTOW AND CANNING TOWN MEDICAL SOCIETY.—A meeting of the above society was held on Sept. 20th, Mr. F. W. P. Holton presiding. After the transaction of the ordinary business Dr. Edmund Hay, in the absence of Mr. Percy Rose, opened a discussion upon Various Forms of Sore-throat, in which Mr. R. Buksh, Dr. Thomas Anderson, Mr. H. A. de B. Nelson, Dr. Reynolds, and Mr. P. Napier Jones took part.

MEDICO-PSYCHOLOGICAL ASSOCIATION.—The autumn meeting of the South-Eastern Division of the above association will be held at Ticehurst House, Sussex, on Wednesday, Oct. 10th. Luncheon will be at 1 P.M. and members will inspect the asylum and grounds during the course of the afternoon. Members are invited to dinner by Dr. A. S. L. Newington, Mr. H. F. H. Newington, and Mr. T. Newington. The hour will be 6.30 P.M., and the place Ticehurst. Morning dress. The station is Wadhurst, on the South-Eastern Railway.

THE LONDON HOSPITAL MEDICAL COLLEGE.—The following are the results of recent scholarships:—Price Science Scholarship, value £120, J. Roberts; Entrance Science Scholarship, value £60, G. Worrall; Entrance Science Scholarship, value £35 (scholarship divided), A. Salmon and W. D. Hartley; Price Scholarship in Anatomy and Physiology (open to students of Oxford and Cambridge only), value £60, H. M. Turnbull (Oxford University); Epsom Scholarship, value £126, E. L. Sandiland.

BOOKS, ETC., RECEIVED.

ALCAN, FÉLIX, Paris.
Recherches sur l'Épilepsie et l'Idiotie. Par Bourneville, &c. Vol. xxii. 1900.

AMES, HELLER, AND CO., Barrack-street, Perth.
Baby Mine: A Book for Mothers. By E. Paget Thurston, M.D., B.A. Cantab. 1900.

APPLETON, D. AND CO., New York.
Transactions of the Society of Alumni of Bellevue Hospital, 1898, 1899. 1899.

BAILLIÈRE, J. B., ET FILS, Paris.
Le Pneumocoque et les Pneumococcies. Par A. Lippmann. Préface du Dr. Duflocq. 1900.

BAILLIÈRE, TINDALL, AND COX, King William-street, Strand, London.
Manual of the Diseases of the Eye. By C. H. May, M.D. 1900. Price 8s. 6d. net.
A Synopsis of the British Pharmacopœia, 1898. Compiled by H. W. Gadd, with analytical notes and suggested standards by C. G. Moor, M.A. Cantab., F.I.C. Fifth edition. 1900. Price 1s. net.

CHURCHILL, J. & A., Great Marlborough-street, London.
The Theory and Practice of Medicine. By J. L. Notter, M.A. M.D. Durh., and W. H. Horrocks, M.B., B.Sc. Lond. Second edition. 1900. Price 25s.
Surgical Pathology and Morbid Anatomy. By A. A. Bowlby, F.R.C.S. Fourth edition. 1900. Price 10s. 6d.
Uric Acid as a Factor in the Causation of Disease. By A. Haig, M.A., M.D. Oxon., F.R.C.P. Fifth edition. Illustrated. 1900. Price 14s.

FISCHER, G., Jena.
Die Krankheiten der Warmen Länder. Von Dr. B. Scheube. Zweite Auflage. 1900.

GEORGI, A., Leipzig.
Beiträge zur Handedesinfektion. Von Dr. Kronig und Dr. Blumberg. 1900.
Der Ueberschuss an Knabengeburten und seine Biologische Bedeutung. Von Dr. A. Rauber. 1900.
Handbuch der Militärkrankheiten. Von Dr. F. A. Dums. Band iii., Die Krankheiten der Sinnesorgane und des Nervensystems. 1900.

JACKSON, W. P. AND SONS, Salford.
Lancashire Asylums Board: Report of a Deputation appointed to visit Asylums on the Continent, with Recommendations regarding the Building of a new (sixth) Lancashire Asylum. Price of report, 5s. each, and postage.

KIMPTON, H., High Holborn, London.
A Text-book of Practical Therapeutics. By H. A. Hare, M.D., B.Sc. Eighth edition. Illustrated. 1900. Price 21s. net.
Cancer of the Uterus. By T. S. Cullen, M.B. Illustrated. 1900. Price 31s. 6d. net.
Text-book of Practical Medicine. By W. G. Thompson, M.D. Illustrated. 1900. Price 21s. net.

LEWIS, H. K., Gower-street, London.
Illustrated Lectures on Nursing and Hygiene. By R. Lawton Roberts, M.D. Lond., D.P.H. Camb. Third edition. Illustrated. 1900. Price 2s. 6d.
The Student's Medical Dictionary. By G. M. Gould, A.M., M.D. Eleventh edition. Illustrated. 1900. 14s. net.

LONGMANS, GREEN AND CO., Paternoster-row, London.
Notes on Physiology. By H. Ashby, M.D. Lond., L.R.C.P. Seventh edition. 1900. Price 5s.

METHUEN AND CO., Essex-street, London, W.C.
Wounds in the Rain: A Collection of Stories relating to the Spanish American War of 1898. By Stephen Crane. 1900. Price 6s.

PUBLISHED BY THE FREE PRESS ASSOCIATION, Burlington.
Transactions of the Vermont State Medical Society, 1899. 1900.

RICHARDS, GRANT, Henrietta-street, London.
The Struggle for Success: A Study in Social Compromise, Expediency, and Adaptability. By A. Stodard-Walker. 1900. Price 6s.

SMITH, ELDER AND CO., Waterloo-place, London.
Orthopædic Surgery. By C. B. Keetley, F.R.C.S. 1900. Price 16s.

Magazines, &c., for October: **Strand Magazine, Boy's Own Paper, Girl's Own Paper, Leisure Hour, Sunday at Home, Ludgate Magazine, Westminster Review, Contemporary Review, Friendly Greetings, Myra's Journal, Pall Mall Magazine, Windsor Magazine, English Illustrated Magazine, Knowledge, Humanitarian, Wide World Magazine, New Century Review, North American Review, Cornhill Magazine, Sunday Strand, Captain, Traveller, Sandow's Magazine, New Monthly.**

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.

ADAMS, E. W., M.B. Lond., has been appointed Medical Officer for the South-East Sanitary District of the Sheffield Union.
ALLWORK, F., L.S.A. Lond., has been appointed a Public Vaccinator for New Norfolk, Tasmania.
ANDERSON, B. A., M.B., C.M. Aberd., has been appointed a Public Vaccinator for Westbury, Tasmania.
BARR, JOHN, M.B., C.M. Glasg., has been re-appointed Medical Officer of Health by the Rishton Urban District Council.
BRUZAUD, ALFRED S., M.R.C.S., L.R.C.P., has been appointed Senior House Surgeon to the Huddersfield Infirmary.
CHAMP, J. H., M.D. Lond., M.R.C.S., has been appointed a Public Vaccinator for Broad Arrow, West Australia.
CHESSON, H., L.R.C.P. Lond., M.R.C.S., has been appointed Assistant Medical Superintendent, Hospital for Insane, Toowoomba, Queensland.
COOK, JAMES, L.R.C.P., L.R.C.S. Edin., has been appointed Medical Officer for Barcaldine, Queensland.
COOPER, H. S., L.R.C.P. Lond., M.R.C.S., has been appointed Certifying Surgeon under the Factory Acts for the Yaxley District of the County of Huntingdon.
CRAWFORD, C. R. H., L.R.C.P. Lond., M.R.C.S., has been appointed Assistant Medical Officer of the Workhouse, Tonbridge Union.
DUCKWORTH, H., M.B., C.M. Edin., has been appointed Medical Officer of Health for the Oswaldtwistle Urban District.
FELL, ROBERT, M.R.C.S., L.R.C.P., has been appointed Senior Assistant House Surgeon to the Huddersfield Infirmary.
FORSYTH, W. A., M.B., Ch.B. Melb., has been appointed Officer of Health for the Shire of Mansfield, Victoria, Australia.
GODFREY, P. J., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Health Officer for the Port of Strahan, Tasmania.
GREGG, JAS., M.B., B.Ch. Dubl., has been appointed a Public Vaccinator for Russell, Tasmania.
HEALEY, W. J., L.R.C.P., L.R.C.S. Irel., has been appointed Officer of Health to the Mertondale Local Board of Health, West Australia.
HEWITSON, ALFRED, M.R.C.S., L.R.C.P., has been appointed Junior Assistant House Surgeon to the Huddersfield Infirmary.
ISAAC, R. J., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Northern Sanitary District of the Gower Union, vice B. Jones, resigned.
KATER, N. W., M.B., Ch.M. Syd., has been appointed Demonstrator of Anatomy to the University of Sydney, New South Wales.
KINNEAR, J. C. M., M.B., M.S. Aberd., has been appointed Medical Officer for the Wickham Sanitary District of the Fareham Union, vice P. J. Molony, resigned.
LINDLEY, LENNOX H., M.B., B.Ch. Oxon., has been appointed by the Shah as his Assistant Physician.
LOVE, W. W. R., M.B., Ch.M. Edin., has been appointed a Member of the Queensland Medical Board.
MACKENZIE, M., F.R.C.S. Edin., L.F.P.S. Glasg., has been appointed a Public Vaccinator for the District of Buller, New Zealand.
MACNAMARA, M., L.K.Q.C.P. Irel., L.R.C.S., has been appointed Medical Officer, St. Vincent's Orphanage, Nudgee, Queensland.

MALLETT, F. R., M.D. Edin., has been appointed Medical Officer for the Eastern Bolton Sanitary District, Bolton Union, vice F. B. Mallett, deceased.

MARSH, JAMES, M.B., C.M. Edin., has been appointed Certifying Surgeon under the Factory Acts for the Urban Districts of Tyldesley and Atherton, in the C unty of Lancaster.

MARSHALL, FRANK E., M.B., Ch.B. Vict., L.S.A., has been appointed Surgical Tutor and Registrar to the Royal Infirmary, Liverpool, vice J. P. Nixon.

MEGGITT, HERBERT, L.R.C.P., L.R.C.S., has been appointed District Surgeon for South Tottenham of the City of London Lying-in Hospital.

MOORE, E. J., M.B., B.Ch. Oxon., M.R.C.S., D.P.H. Camb., has been appointed Medical Officer for Eltham.

NICHOLSON, H. GILBERT, M.R.C.S., L.S.A., has been appointed District Surgeon for Bethnal-green of the City of London Lying-in Hospital, vice W. F. Blyth, resigned.

PRICE, T. A., M.B., Ch.B. Edin., has been appointed Assistant Medical Officer, Hospital for Insane, Goodna, Queensland.

RIDDELL, ROBERT, M.B., C.M. Edin., has been appointed Certifying Surgeon under the Factory Acts for the Sandbach District of Cheshire.

SMITH, JAMES, L.R.C.P., L.R.C.S. Edin., has been appointed Public Vaccinator for Port Frederick and Port Sorell, Tasmania.

STALLARD, NIGEL F., M.B., M.R.C.S., L.R.C.P., has been appointed House Surgeon and Registrar to the Royal Orthopædic Hospital, vice R. H. Bremridge, resigned.

STUART, G. G., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Public Vaccinator for Ulverstone, Tasmania.

WALDEN, F. J., M.B., Ch.M. Edin., has been appointed a Public Vaccinator for Cambridge, Sorell, and Spring Bay, Tasmania.

WHITE, G. V., M.B. Melb., has been appointed Medical Officer at Thursday Island, also Health Officer at Thursday Island, also Visiting Surgeon to the prison at that place, and Medical Officer for the care, inspection, and supervision of lepers detained at the Lazaret at Friday Island, Queensland.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BOURNEMOUTH NATIONAL SANATORIUM FOR CONSUMPTION AND DISEASES OF THE CHEST (OPEN-AIR TREATMENT).—Resident Medical Officer. Salary commencing at £10 per working month (institution closed July and August), with board, residence, and washing (no alcohol provided).

BOURNEMOUTH: THE BOSCOMBE HOSPITAL.—House Surgeon. Salary £60 per annum, with board, lodging, and washing. No beer or spirits.

CITY HOSPITAL FOR INFECTIOUS DISEASES, Newcastle-upon-Tyne.—Resident Medical Assistant for one year. Salary £60, with board, lodging, and washing.

CITY DISPENSARY, 29 and 30, College-street, Dowgate-hill, London.—Physicians. Apply to the Secretary, 98, Cannon-street, E.C.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Second House Physician, for six months. Salary at the rate of £30 per annum, with board and residence.

COUNTY ASYLUM, Chester.—Junior Assistant Medical Officer, unmarried. Salary £130 per annum, rising £10 yearly to £160, with board (no liquors), lodging, and washing.

COUNTY ASYLUM, Lancaster.—Assistant Medical Officer. Commencing salary £125 per annum with the usual allowances.

DENBIGHSHIRE INFIRMARY, Denbigh.—House Surgeon for 12 months. Salary £100, with board, residence, and washing.

DEVONSHIRE HOSPITAL, Buxton, Derbyshire.—Assistant House Surgeon. Salary £50 per annum, with furnished apartments, board, and washing.

DOWN DISTRICT ASYLUM, Downpatrick.—Assistant Medical Officer unmarried. Salary £100 per annum, with prospects of increase, and furnished apartments, board, washing, and attendance.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Board and washing provided.

DUNDEE ROYAL INFIRMARY.—Resident Medical Assistant for six months. Salary at the rate of £40 per annum, with board and washing.

DURHAM COUNTY ASYLUM, Winterton, Ferryhill.—Junior Assistant Medical Officer. Salary £140, rising £10 annually to £160, with board, laundry, and attendance.

FRENCH HOSPITAL AND DISPENSARY, 172, Shaftesbury-avenue, London.—Resident Medical Officer (not a female), speaking French, unmarried. Salary £80 a year, with full board.

GUEST HOSPITAL, Dudley.—Assistant House Surgeon for six months. Salary at the rate of £40 per annum, residence, board, and washing.

HORTON INFIRMARY, Banbury.—House Surgeon and Dispenser. Salary £80 per annum, with board and lodging.

HOSPITAL FOR WOMEN, Soho-square, London.—House Physician for six months. Salary £30 for that period.

HOSPITAL FOR WOMEN, Soho-square, London.—House Surgeon, unmarried. Salary £100 a year, with board and lodging.

KENT AND CANTERBURY HOSPITAL.—House Surgeon, unmarried. Salary £100 a year, with board and lodging.

KENT COUNTY ASYLUM, Chartham, near Canterbury.—Junior Assistant Medical Officer, unmarried. Salary £125 per annum, with board, lodging, and washing.

LIVERPOOL EYE AND EAR INFIRMARY.—House Surgeon. Salary £80, with residence and maintenance.

LIVERPOOL INFIRMARY FOR CHILDREN, Myrtle-street.—Assistant House Surgeon for six months. Salary £25 for that period, with board and lodging.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Resident Medical Officer for one year. Salary 100 guineas per annum, with board, l dging, and washing.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—Non-resident House Surgeon for six months. Honorarium at the rate of £25 a year.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £70 per annum, with board and residence at the Infirmary.

MANCHESTER HOSPITAL FOR CONSUMPTON AND DISEASES OF THE THROAT AND CHEST.—Resident Medical Officer for the In-patient Department at Bowden, Cheshire. Salary £60 per annum, with board, apartments, and washing.

MANCHESTER SOUTHERN AND MATERNITY HOSPITAL.—Resident House Surgeon. Honorarium £50 per annum and board.

MILLER HOSPITAL AND ROYAL KENT DISPENSARY, Greenwich-road, S.E.—Honorary Surgeon to the hospital.

NORTH ORMESBY COTTAGE HOSPITAL.—House Surgeon, unmarried, non-resident. Salary £200 per annum. Applications to the Secretary, Royal Exchange, Middlesborough.

NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill, Stoke-upon-Trent.—House Physician. Salary £100 per annum, increasing £10 per annum conditionally, with furnished apartments, board, and washing.

PARISH COUNCIL OF TINGWALL, Whiteness and Weisdale.—Medical Officer. Salary £40 per annum, which includes the cost of medicine for paupers belonging to the parish. Apply to the Inspector of Poor, Scalloway, Shetland.

PARISH OF ROUSAY AND EGILSHAY.—Resident Medical Officer. Salary £51 sterling. Apply to the Clerk of Parish Council, Rousay, Orkney.

PLYMOUTH BOROUGH ASYLUM.—Assistant Medical Officer, unmarried. Salary £150 per annum, rising £10 annually to £200 per annum, with furnished apartments in the asylum and board and washing.

ROTHERHAM HOSPITAL.—Assistant House Surgeon. Salary £60, with board, lodging, and washing.

ROYAL BUCKINGHAMSHIRE HOSPITAL, Aylesbury.—Resident Surgeon, unmarried. Salary £80 first year, rising annually by £10 to £100, with board and furnished apartments.

SEAMEN'S HOSPITAL SOCIETY (DREADNOUGHT), Greenwich, S.E.—House Surgeon. Salary £50 per annum, with board, residence, and washing.

SOUTHPORT INFIRMARY.—Honorary Surgeon for the Treatment of Diseases of the Eye.

ST. MARY'S HOSPITAL FOR SICK CHILDREN, Plaistow, E.—Honorary Gynæcologist.

STOURBRIDGE DISPENSARY.—House Surgeon. Salary £120 a year, rising £5 annually to £130, with furnished rooms, coal and gas, and an allowance of £25 for travelling expenses.

SUSSEX COUNTY HOSPITAL, Brighton.—Resident Pathologist, unmarried. Salary £70 per annum, with board and residence in the hospital, and washing. Also Assistant House Surgeon, unmarried. Salary £60 per annum, with board and residence.

THE CHIEF INSPECTOR OF FACTORIES gives notice of a vacancy as Certifying Surgeon under the Factory Acts at Wincanton in the County of Somerset.

VICTORIA CHILDREN'S HOSPITAL Park-street, Hull.—Female House Surgeon. Salary £50 per annum, with board and laundry.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Physician for two years. Salary £100 a year, with board, lodging, and washing.

Births, Marriages, and Deaths.

BIRTHS.

ATKINSON.—On Sept. 19th, at Elmhurst, Hampton-hill, Middlesex, the wife of G. L. Atkinson, M.R.C.S., L.R.C.P. Lond., of a son.

CRAWSHAW.—On Sept. 25th, at 15, Cobcar-street, Elsecar, the wife of J. H. Crawshaw, Surgeon, of a son.

DICKIE.—At Moriani, Assam, on August 28th, the wife of I. L. Dickie, M.B., of a daughter.

ODELL.—On the 23rd inst., at York House, Hertford, the wife of Robert Odell, of a son.

WATSON.—On Sept. 16th, at 1, York-road, Hove, Sussex, the wife of Solomon George Watson, M.R.C.S., of a son.

MARRIAGES.

BAYLISS—SIMONS.—On the 20th inst., at St. James's Church, Boscombe, by the Rev. F. Cecil Bayliss, brother of the bridegroom, assisted by the Rev. Leofric Cutler, Richard Arthur Bayliss, M.R.C.S., L.R.C.P. Lond., youngest son of Richard Bayliss, of Spondon, Derbyshire, to Kate Diana Hester, second daughter of the late Nathaniel Wells Simons, J.P., of Hawkwood, Boscombe.

RAY—TAUBMAN.—On the 19th inst., at Holy Trinity Church, Bolton-le-Sands, Carnforth, by the Rev. H. T. Greaves, M.A. (brother-in-law of the bridegroom), assisted by the Rev. A. R. Tomlinson, M.A., vicar, John Howson Ray, Ch.M. (Vict.), F.R.C.S. (Eng.), fourth son of the late Wm. Ray, of Whalley Range, Manchester, to Edith, only daughter of the late Wm. Hy. Taubman, of Blackburn.

WILLCOCKS—DUNLOP.—On Sept. 25th, at St. Mary Magdalene's, Stoke Bishop, Arthur Durant Willcocks, M.R.C.S., of Taunton, to Martha ("Pattie"), daughter of the late Matthew Dunlop, of St. Michael's-hill, Bristol.

DEATHS.

BRADSHAW.—On Sept. 23rd, at Avenue-road, Regent's-park, James Dixon Bradshaw, M.A., M.B. Oxon., in his 53rd year.

HAVILAND.—On Sept. 22nd, at Cedar House, Cheniston-gardens, W., Henry James Haviland, M.D., J.P. for Cambs., aged 74.

THOMSON.—On Sept. 25th, at 14, Coates-crescent, Edinburgh, Thomas Cleghorn, eldest son of John Thomson, M.D., F.R.C.P. Ed., in his 13th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

"PROFESSIONAL ORGANISATIONS."

OUR readers will have noticed the correspondence which has been taking place in our columns with reference to the subject of "Professional Organisations." The protagonists were Dr. James Ryley and the Yarmouth District Committee of the Incorporated Medical Practitioners' Association, through its secretary, Mr. W. E. Wyllys. The controversy was commenced by Dr. James Ryley in THE LANCET of August 25th, p. 627. Mr. W. E. Wyllys, on behalf of the Incorporated Medical Practitioners' Association, replied to Dr. Ryley in our issue of Sept. 8th, forwarding to us at the same time some correspondence which had passed between the association and Dr. Ryley at various dates between June 16th and August 26th. We stated in a note to Mr. Wyllys's letter that we had read the correspondence, which was, however, incomplete as the association was waiting for a reply from Dr. Ryley, but that reading the letters had left the impression on our minds that Dr. Ryley ought to have no difficulty in remaining a member of the association without any sacrifice of his principles. It may be as well here to record the fact that the subject in each correspondence was whether or no the medical men attached to the institute in Yarmouth founded by the friendly societies should be met in consultation. Cases of emergency were to be seen in consultation without any doubt, a fact which, so far as we understand, Dr. Ryley does not seem to have realised. A further letter from Dr. Ryley appeared in THE LANCET of Sept. 15th to which the association replied through Mr. Wyllys in THE LANCET of Sept. 22nd, and another appears at p. 968 of our issue of to-day. More letters passed between Dr. Ryley and the association at dates varying from Sept. 8th to Sept. 10th, but their tenour may be reduced to the simple statement that Dr. Ryley resigned his membership of the association and that this resignation was formally accepted. We have therefore nothing to add to our former opinion expressed in our note to Mr. Wyllys's letter in THE LANCET of Sept. 8th, p. 789.

GERMAN TEXT-BOOKS ON ANATOMY.

To the Editors of THE LANCET.

SIRS,—Will you kindly name in your next issue a German text-book of anatomy of moderate size which can be relied on; also publisher of same.

I am, Sirs, yours faithfully,

Sept. 24th, 1900. COOL SHADE.

*** Any one of the following works would probably meet the requirements of our correspondent:—A. Voll: Kompendium der normalen Anatomie (eight marks); Fr. Reinke: Anatomie des menschen (14 marks); Ed. Richter: Grundriss der normalen menschlichen Anatomie (15 marks); C. von Langer: Lehrbuch der systematischen und topographischen Anatomie (17 marks). The first of these works is rather condensed. Any of them can be obtained in London from Muller of Star Yard, Carey-street, W.C., or from Dulau and Co., Soho-square.—ED. L.

"WANTED—A HOME FOR AN EPILEPTIC."

To the Editors of THE LANCET.

SIRS,—I am writing to say that there is a good home for invalided Roman Catholic clergy in Clifton kept by the Nursing Sisters Clifton-wood Convent, Clifton.

I am, Sirs, yours faithfully,

Bristol, Sept. 25th, 1900. LAURA HEATH.

FOR RIDERS IN HANSOM CABS.

ON the afternoon of Friday, Sept. 21st, two inventions for use in hansom cabs were exhibited on the Thames Embankment by the inventor, Captain Dickson. One was a modification of the ordinary gravel iron, a wheel taking the place of the usual loop. This wheel in case of the horse stumbling makes a half revolution, thus assisting the horse to recover his footing and lessening the liability of the driver to be thrown from the box. The other invention was a safety strap intended to pass in front of the "fare" and so to keep him from being shot out of the cab in case of an accident.

"WANTED—A DIAGNOSIS."

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Sept. 8th there was a letter from "Inquirer" asking for a diagnosis of a case in which the principal symptom was an iridescent colouration of the urine, looking like blood and yet not being due to blood. I have lately had a similar case which I think may interest "Inquirer" and others of your readers. A boy, aged 13 years, was brought to me with no particular complaint except that his urine seemed to contain blood. He was quite well and comfortable in himself. His urine presented a beautiful pinkish colour and was clear and strongly iridescent. Examination failed to detect any abnormal constituent in the urine, though phosphates were deposited on heating. The pigment, whatever it was, was soluble in chloroform. Inquiry failed to elicit any history that could account for the phenomenon and on the following day the urine was free from unusual colour. Three days later the boy returned and told me that he had discovered the cause of the colouration, which had again followed the eating of some of the ordinary "musk" lozenges such as children commonly buy. There is no doubt that this is the cause in my patient's case, and it surprises me very much that I should never have seen or heard of the occurrence before, for pink musk sweets have been familiar to me from my childhood and are largely consumed every day by children, and yet I have never heard of their producing this effect until now. The appearance of the urine was most distinctive and could hardly have escaped observation. Anyone would have thought that it contained blood. The questions as to what the pigment is and how it affects the urine are of much interest, and I have submitted a sample both of the urine and the sweets to Dr. W. D'Este Emery, of the Birmingham University, who is kindly investigating the matter. The result of his researches I hope may be communicated to you in due time.

I am, Sirs, yours faithfully,

Bromsgrove, Sept. 25th, 1900. CAMERON KIDD.

"IS IT A COMPANY?"

WE have had forwarded to us a four-page handbill of an institution called The Progressive Medical Alliance. Page 1 is embellished with a view of the building where the Alliance is housed, 57 and 59, Oxford-street, W., and gives the addresses where men only and where women only are seen. Pages 2 and 3 we print below:—

DISEASES OF MEN.

The P. M. A.

EXPERTS AND SPECIALISTS

Absolutely Cure all Nervous Complaints, Physical Exhaustion, Fits, Skin, and Blood Diseases and Genito-Urinary Troubles.

Remember . . .

that we are a reputable Medical firm, engaged in a noble calling and that experience has taught us to cure many cases which others have pronounced hopeless, and to use many effective remedies of which ordinary practitioners are ignorant.

The Physicians and Specialists on the Staff of the PROGRESSIVE MEDICAL ALLIANCE are graduates of British, Continental, and American Universities, and have attained a high eminence in their Specialities.

Nervous, Private, Blood, Skin, and Chronic Diseases specially invited.

ALL CASES STRICTLY CONFIDENTIAL.

DISEASES OF WOMEN.

The P. M. A.

Ladies' Department, 7, Soho Street, is now open for the Scientific Treatment and Cure of all FEMALE COMPLAINTS and is under the Supervision of a Lady Physician of the widest experience and highest qualifications. Amongst the numerous examinations she has passed are the Staats-Examen of the University of Berne, the M.D. Turicensis, the Examination of Physician and Licentiate in Medicine of the King and Queen's College of Physicians in Ireland and the Licentiate in Midwifery of the King and Queen's College of Physicians, Dublin. Having held hospital appointments and enjoyed a large practice, her experience has not only been wide, but practical, and ladies will do well to consult her upon all diseases peculiar to their sex.

HOURS 11 TO 2 AND 6 TO 9.

FRAUEN KRANKHEITEN.

Eine Frau Doktor. Praktische Arzt.

Stunden 11 - 2. 6 - 9.

Sonntags Keine Sprechstunden.

ON PARLE FRANCAIS. DEUTSCH WIRD GESPROCHEN

We think it would be as well for the General Medical Council to ascertain who are the graduates of British universities on the staff of the Progressive Medical Alliance. The Council might also take notice of the lady who has passed "the M.D. Turicensis" and also the examination of the Physician and Licentiate in Medicine of the King and Queen's College of Physicians in Ireland and the Licentiate in Midwifery of the King and Queen's College of Physicians, Dublin.

THE CLUB QUESTION IN LANCASTER.

WE are pleased to note that the dispute between the medical men of Lancaster and the medical clubs has ended in a complete victory for the former. They have obtained an advance in fees from 3*s.* 6*d.* per head per annum to 5*s.* The little campaign has been carried out quietly and with little ill-feeling through the medium of the local medical society, which includes all members of the profession in the

town. Those not directly affected supported their colleagues and thus enabled them to achieve a result that they would have otherwise been powerless to attain. It may serve as an inducement to others to try what a little organisation will do.

"A SUBSTITUTE FOR BRANDY."

OUR remarks upon the temperance workers substitute for brandy seem to have given Mrs. Oliver and Dr. R. Watson a certain amount of pain. Mrs. Oliver argues that granting that her mixture contains 83 per cent. of alcohol as against 50 per cent. in brandy, both by volume, it does not follow that the patient will imbibe that percentage. She says: "It requires to be very copiously diluted with from eight to 16 times its bulk of water, so that if it contains 83 per cent. when made up by a chemist it only contains 5 to 10 per cent. when used." Mrs. Oliver further says that the value of alcohol in her preparation is not as a drug but as a preservative, and that she must employ an alcoholic tincture as a medium until such time as it may be replaced by another. She further says that several of the constituents of the substitute, such as carbonate of ammonia, ginger, oil of nutmeg, are, singularly or collectively, more potent or efficacious as a tonic and stimulant than brandy. We will take the last of Mrs. Oliver's remarks first. It is true that ginger, carbonate of ammonia, and various essential oils are both stimulant and tonic, but the value of brandy, as we pointed out in our issue of Sept. 22nd (p. 856), lies not in the alcohol which it contains, but in the ethers. We think it quite possible that ginger and carbonate of ammonia, administered in hot water, would be quite as valuable a stimulant as alcohol, if not more so. Dr. Watson, in a signed article in the *League Journal* for Sept. 22nd, argues that the virtue of the mixture is utterly independent of alcohol, but it seems to us that both Mrs. Oliver and Dr. Watson miss the point of our argument. The original prescription was given, according to the *League Journal*, to influence people against resorting to an *alcoholic* remedy, and we repeat that the substitute recommended being much more alcoholic than ordinary brandy is in no way a substitute for it. We are quite willing to allow that a draught given out of a medicine bottle is less attractive than out of an ordinary brandy bottle or that obtained from a public-house; but, as they both contain alcohol, for the one to be put down as containing incalculable possibilities for evil and the other to be recommended to every member of "our guild" is inconsistent, to call it nothing else. The following letters show that we are not alone in this view.

To the Editors of THE LANCET.

SIRS,—The short-sighted logic and characteristic righteous indignation exhibited at your matter-of-fact and truthful criticism of the utterly ineffectual and even injurious methods of unscientific temperance reformers recall to my mind another amusing experience of the same order. A friend of mine in Central America used long to distress his sober-minded wife with the too frequent imbibition of his favourite "four crown." All of a sudden he developed strongly-marked total abstinence principles, much to the consolation of his wife and friends. He became, and probably is to-day, a rabid total abstainer, lecturing and arguing that alcohol is always a virulent poison! But in all probability only I and the chemist who made up the pick-me-ups know that our worthy friend and staunch teetotaler took daily a dozen or more drinks of a mixture of the tinctures of ginger, capsicums, cardamoms, and the liquor of the acetate of ammonium with the aromatic spirits of ammonia, in which the proportion of alcohol is much the same as in the substitute for brandy Mrs. Oliver's friend intends distributing broadcast in the cause of temperance—or is it total abstinence? But a nod's as good as a wink to a blind horse!

I am, Sirs, yours faithfully,

Sept. 24th, 1900. J. W. C.

To the Editors of THE LANCET.

SIRS,—Your remarks in regard to the prescribing of sal volatile and chloric ether mixtures for dipsomaniacs are perfectly just. I recollect dispensing the following prescription for a lady: Compound tincture of cardamoms, three ounces; compound spirit of ammonia, three ounces; and spirit of chloroform, two ounces; a small spoonful in water every three hours. The lady consumed three or four bottles of this per day when the dyspeptic flatulence (?) was particularly bad. This was done while the medical attendant was in charge of the case. It was really an instance of substituting one tipple for another. Two other instances in my own experience of the abuse of hysteria and flatulence mixtures might also be mentioned, but the cause and effect were the same—addiction to the brandy bottle. In all cases the original intention of the prescriber was at first adhered to, but the alcohol in the physic soon made its presence felt.

I am, Sirs, yours faithfully,

Sept. 24th, 1900. PHAR. CHEM.

A SINGULAR STORY OF HYPNOTISM.

MEDICAL subjects are, with few exceptions, unsuitable for discussion in the columns of ordinary newspapers, and nothing but harm is likely to result from this kind of publicity being given to clinical reports of hospital cases. Journalistic enterprise, which has on many occasions carried its votaries too far, concerns itself but little with questions of medical etiquette. This may, perhaps, be the reason why the *Daily Mail* of Sept. 24th devotes rather more than a column to the description of a visit to the British Hospital for Mental Disorders and Brain Diseases ("Forbes Winslow Memorial"), 208, Euston-road, N.W. The article has no signature of any kind nor anything to indicate the writer's position; his condemnation of what he professes to have seen is very emphatic, so it will be better to quote his own words rather than to attempt a summary of them.

"..... I had been invited to witness a night or two ago the hypnotic transferences which take place regularly at this institution, and been assured that the physician who attends 'adopts the same experiments as followed out by the late Professor Charcot at the Salpêtrière School, Paris, with equal success.' ..... It was the night of the week upon which Dr. Forbes Winslow himself attends to see the patients. ..... The doctor sat ..... in a ..... room on the first-floor front; and waiting in readiness behind him was a clean-shaven youth, thick-set, with his hair plastered over his forehead and the general cut of the valet. This turned out to be a 'professional medium' and the doctor called him 'May.' The first patient shown in was a melancholy looking, feeble, vacant man, who was under treatment for depression. ..... May, the medium, was seated opposite to the patient and was, the doctor asserted, hypnotised. The pair joined hands, and May pulled and contorted and grimaced until the good doctor cried 'Wake!' when the medium instantly ..... emerged from the hypnosis in which he purported to have been. 'Now you are better,' said the doctor to the patient. 'Look at the change,' he cried to me; and truly a weary smile was for the time evicting the gloom from the sufferer's face. ..... Then came ..... a woman of 30 whose mind was obsessed with what is known as an 'imperative idea.' ..... The ..... physician ..... did not hypnotise this patient at all, any more than he had hypnotised any other patient. He did not even profess to do so. What he did profess to do was to hypnotise May and to assure that unfortunate medium that he, the medium, had the woman's confused feelings now. ..... There were other patients, but here the doctor switched off to hypnotise May for my special benefit and to explain that while he was in a state of hypnosis he could feel the various symptoms which had been transferred from patients. ....."

The following letter appeared in the *Daily Mail* of Sept. 26th:—

"*To the Editor of the 'Daily Mail.'*

"It is the duty of the physician to endeavour to relieve suffering in the way which appears to him to be the most advisable.

"In the remarks referring to this subject which appeared in your issue of yesterday you apparently regard this treatment of nervous diseases by transference as novel and 'strange.' The first physicians who brought this to my personal knowledge were Prof. Lombroso of Turin and Dr. Gorodichze of Paris. It was the opinion of these gentlemen that some cases of nervous disease, which in the old days would become chronic in their nature, were now amenable to the methods I am adopting at my hospital.

"Transference was largely used by Dr. Luys at La Charité Hospital, Paris, and an article which appears in the *Fortnightly Review* for August of 1890 shows that even 10 years ago this treatment was recognised in France. In cases where an indirect 'suggestion' is required it can only be obtained by transference.

"33, Devonshire-street, W., Sept. 25th." "FORBES WINSLOW.

TO MEDICAL FREEMASONS.

To the Editors of THE LANCET.

SIRS,—Will you allow me to point out to those who are brother Masons as well as brothers in the medical profession that at the elections to be held at the Royal Masonic Institution for Girls and the Royal Masonic Institution for Boys on Oct. 11th and Oct. 12th respectively there are two "medical" girl candidates (No. 17 and No. 24 on the list) and one "medical" boy candidate (No. 13). I have reason to think that previous appeals such as this in your columns have done much good and trust you will find room for these few lines.

I am, Sirs, yours faithfully,

Sept. 24th, 1900. P. Z.

CHRONIC URETHRITIS.

To the Editors of THE LANCET.

SIRS,—A B contracted urethritis 18 months ago. After using all the remedies—protargol, largine, &c.—without any avail everything was stopped. Microscopic examination showed only streptococci and pus. At present with the slight running drop of pus, and that only occasionally, he suffers from intense painless chordee every morning with headache. I shall feel grateful if any of my *confrères* will give me the benefit of their advice. The patient is 40 years of age, grand physique, and most abstemious, and he has means.

I am, Sirs, yours faithfully,

Sept. 6th, 1900. SOUTH AFRICAN.

Boxers.—The gentleman mentioned by our correspondent had better apply to one of the usual agents. We should not advise anyone to go to South Africa at present on the chance of picking up work, but if he went out to fill some definite post matters would be different. We presume the qualification was obtained prior to 1886.

A. F.—Our correspondent will find our opinion of the preparations in THE LANCET of June 16th (p. 1750) and August 11th, 1900 (pp. 406 and 454). Some correspondence on this subject will also be found in THE LANCET of June 30th (p. 1908) and July 7th, 1900 (p. 52).

B. B. G.—The address of the Society for the Relief of Widows and Orphans of Medical Men is 11, Chandos-street, Cavendish-square, W.

Sixty.—Our correspondent must consult his usual medical attendant. We never give medical advice.

BREATUM.—We regret that in our report of the meeting of the Section of Physiology at the meeting of the British Medical Association published in THE LANCET of August 18th, p. 505, the name of Dr. L. J. J. Muskins was erroneously printed as Maskens.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 27th, 1900.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Sept. 21	30·36	WSW	...	114	73	51	54	58	Fine
,, 22	30·30	S.W.	...	107	74	56	60	61	Overcast
,, 23	30·20	W.	...	106	75	60	60	62	Cloudy
,, 24	29·76	WSW	...	91	70	58	61	63	Cloudy
,, 25	29·89	N.W.	0·09	107	65	49	49	52	Fine
,, 26	30·06	W.	...	107	68	48	53	56	Fine
,, 27	29·62	SSW	...	86	60	56	59	60	Raining

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (1st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M.).

TUESDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.).

WEDNESDAY (3rd).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), Cancer (2 P.M.)

THURSDAY (4th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.) University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.).

FRIDAY (5th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.).

SATURDAY (6th).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 A.M.), Charing-cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), London Throat (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

WEDNESDAY (3rd).—OBSTETRICAL SOCIETY OF LONDON.—8 P.M. Specimens will be shown by Dr. Roberts and others. Paper:—Dr. Herman: On Subcutaneous Symphyseotomy.

FRIDAY (5th).—WEST LONDON MEDICO-CHIRURGICAL SOCIETY (West London Hospital, Hammersmith, W.).—8.30 P.M. The President (Dr. F. F. Schacht): A Few Observations on the Early Treatment of Abdominal Symptoms. (Inaugural Address.)

WEST KENT MEDICO-CHIRURGICAL SOCIETY (Royal Kent Dispensary, Greenwich-road, S.E.).—8.45 P.M. Election of Officers and Members. Exhibition of Clinical Cases and Specimens by Dr. Scholefield, Dr. Toogood, and Mr. G. C. Williams.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (1st).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. T. Colcott Fox: Consultation. (Skin.)

TUESDAY (2nd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. E. Squire: Consultation. (Medical.)

WEDNESDAY (3rd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. A. Hillier: Consultation. (Medical. 5-7 P.M. Dr. W. J. Horne: Class. Practical Rhinology and Laryngology. Demonstration II.

THURSDAY (4th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Consultation. (Surgical.)

FRIDAY (5th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. R. Lake: Consultation. (Ear.)

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

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Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1900, which was completed with the issue of June 30th, and the Title-page to the Volume, were given in THE LANCET of July 7th.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1900 are now ready. Bound in cloth, gilt lettered, price **18*s.***, carriage extra.

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